

**PERIMETER AIR MONITORING REPORT
AUGUST 31, 2000 THROUGH MARCH 13, 2001
HUNTERS POINT SHIPYARD, PARCEL E
SAN FRANCISCO, CALIFORNIA**

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Prepared for:

Southwest Division
Department of the Navy
Naval Facilities Engineering Command
Environmental Division
1220 Pacific Highway
San Diego, California 92132-5190

Prepared by:

IT Corporation
4005 Port Chicago Highway
Concord, California 94520-1120

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Acronyms and Abbreviations

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
AAMP	Ambient Air Monitoring Plan
ARB	Air Resources Board
AVOCS	automated volatile organic canister sampler
BAAQMD	Bay Area Air Quality Management District
Cal-EPA	State of California Environmental Protection Agency
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Chain-of-Custody
DOD	Department of Defense
EPA	U.S. Environmental Protection Agency
HPS	Hunters Point Shipyard
IRP	Installation Restoration Program
IT	IT Corporation
metals	metals in suspended particulate matter
NPL	National Priority List
PAH	polynuclear aromatic hydrocarbons
PAMP	Perimeter Air Monitoring Plan
PCB	polychlorinated biphenyl
pg/m^3	picograms per cubic meter
PRG	preliminary remediation goals
PUF	polyurethane foam
PVC	polyvinyl chloride
SVOC	semivolatile organic compound
SWDiv	Southwest Division
TIC	tentatively identified compounds
Triple A	Triple A Machine Shop, Inc.
TSP	total suspended particulates
VOC	volatile organic compound

Executive Summary

A grass fire burned on Parcel E of the facility on August 16, 2000. After the surface fire was extinguished, subsurface smoldering was discovered. An initial 24-hour ambient air sample was collected downwind of the fire area on August 31, 2000, and an air-monitoring network was established around the perimeter of Parcel E on September 8, 2000. Air samples were collected at seven stations to determine if contaminants were migrating toward residential and commercial receptors. Additionally, work commenced to smother the subsurface smoldering by constructing a cap on top of the old landfill. The perimeter air-monitoring program continued from September 8, 2000 until the cap was structurally completed on March 13, 2001.

The objective of the perimeter ambient air monitoring at Parcel E was to identify any conditions requiring corrective measures necessary to assure that public health and the environment of the nearby community were not compromised by air emissions from the subsurface smoldering and landfill capping activities.

Integrated air sampling was conducted for volatile organic compounds, semivolatile organic compounds, pesticides and polychlorinated biphenyls (PCBs), metals in suspended particulate matter (metals), low resolution and high resolution dioxins/furans, chlorine compounds, and phosgene. A radioactivity sample was taken during a single sample period. Action levels for target analytes were based on a combination of existing Action Levels in the Parcel B Perimeter Air Monitoring Plan (PAMP) and EPA Preliminary Remediation Goals (PRGs).

The initial 24-hour sample collected August 31, 2000 through September 1, 2000 indicated that all compounds except benzene (detected at 4.63 micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]) were below action levels. There were no detections of pesticides, PCBs, low-resolution dioxin/furan, or metals except for copper. PAHs of several types were detected at levels at least one order of magnitude below action levels. There were no detections of benzo(a)pyrene or related compounds. No compounds inconsistent with those expected from smoldering vegetative matter were detected.

The reported benzene concentration is above the PAMP and EPA PRG action level on a daily basis. The results for this initial sample are consistent with those observed during the Parcel E monitoring program. The highest concentration observed during that monitoring program was $5.91 \mu\text{g}/\text{m}^3$.

During the Parcel E perimeter ambient air monitoring program, over 2,400 different analyses were conducted on the more than 1,700 samples collected from the seven station monitoring network from September 8, 2000 through March 13, 2001. Of the more than 150 target compounds or classes of compounds, 98 were not detected at any time during the program. Monitoring Stations A, B, and C, located along the western and northern parcel boundaries, tended to have fewer detections and lower observed concentrations than Stations D, E, F, and G, because they are usually upwind of Parcel E.

The following compounds and classes of compounds were not detected:

- Pesticides, except for one detection of endrin below action levels (231 samples)
- Chlorine or hydrogen chloride (104 samples)
- Phosgene (216 samples)
- Low resolution dioxins/furans (231 samples)
- Benzo(a)pyrene (231 samples)
- Cadmium (374 samples)
- Vinyl chloride (388 samples)

The following key compounds were detected, but did not exceed PAMP and PRG action levels:

- Lead
- Nickel
- High resolution dioxins/furans

Beryllium, chloroform, and chromium were detected in one, two, and five samples, respectively. The project average concentration for these compounds exceeded the PRG action level because one-half the reporting limit was used to calculate the average for each sample with a nondetected result. In the case of these three compounds, the reporting limits are substantially higher than the PRG action level. A single detection results in a project average that exceeds the PRG action level.

Benzene and carbon tetrachloride were frequently detected, and concentrations exceeded project duration PAMP or PRG action levels. These levels can be attributed to ambient air background levels. The project average benzene and carbon tetrachloride concentrations were less than the background benzene and carbon tetrachloride concentration reported for the Bay Area Air Quality Management District ambient air monitoring station on Arkansas Street in San Francisco. It is unlikely that the landfill fire or capping activities contributed to the observed concentration of these two compounds.

Arsenic and manganese were frequently detected, and observed concentrations exceeded project duration PAMP or PRG action levels or 24-hour PAMP action levels. These metals are naturally occurring in soil, and observed concentrations of these metals can be correlated with earth moving activities during cap construction and wind direction. Manganese was frequently observed above action levels during the Parcel B perimeter air monitoring program in 1998, 1999, 2000, and 2001. The manganese appears to be coming from the local soil at Hunters Point. Average arsenic concentrations did not exceed the project duration PAMP action level. The PRG action level for arsenic is five times lower than the reporting limit; thus, the project average concentration calculations, which are based on using one-half the detection limit for nondetects, result in an exceedance. Arsenic was detected at the detection limit numerous times and appears to also be coming from soil.

Bis(2-ethylhexyl)phthalate was frequently detected and observed concentrations exceeded project duration PAMP action levels. However, PRG action levels were not exceeded. This compound is ubiquitous in nature and is associated with polyvinyl chloride plastic, including gloves. This compound was frequently observed above action levels during the Parcel B perimeter air monitoring program in 1998, 1999, 2000, and 2001. The landfill fire does not appear to be the source of this compound.

A review of the detected compounds and their results indicate that combustion products, such as PAHs and dioxins/furans, directly attributable to the fire were not prevalent and were below project duration PAMP and annual PRG action levels.

Aroclor 1260 (PCB) was detected in 34 of 596 samples. The project duration PAMP action level of $0.01 \mu\text{g}/\text{m}^3$ was not exceeded at any station. The annual average PRG action level of $0.0034 \mu\text{g}/\text{m}^3$ was exceeded at sample Station F with a project average concentration of $0.00429 \mu\text{g}/\text{m}^3$. Aroclor 1260 was above the PAMP action level of $0.01 \mu\text{g}/\text{m}^3$ on a daily basis in nine samples at Station F. Aroclor 1260 was above the PRG action level of $0.0034 \mu\text{g}/\text{m}^3$ on a daily basis in 27 samples (2 at Station E and 25 at Station F).

Almost all of the Aroclor 1260 detections were at monitoring Station F, which is in the southeast corner of the landfill area near the bay, near an area of Parcel E that has Aroclor 1260 contaminated surface soil. Detections of Aroclor 1260 began when landfill capping activities disturbed surface soil along the southern edge of Parcel E. As soon as the Aroclor 1260 results were received from the laboratory, steps were taken to minimize the heavy activity that generated dust in the Aroclor 1260 contamination area. These measures had a noticeable but minimal effect in reducing Aroclor 1260 concentrations. An area contaminated with

Aroclor 1260 was unknowingly chosen as the landfill liner laydown area because there was no other usable space near the cap. Concentrations of Aroclor 1260 ranging to $0.0432 \mu\text{g}/\text{m}^3$ were observed at Station F during delivery and retrieval of the landfill liner. Additional mitigation measures were immediately undertaken to place gravel in the contaminated area to reduce airborne concentrations.

Review of the test results for all samples collected during the Parcel E perimeter ambient air monitoring program indicates the major concern is Aroclor 1260. The detected compounds and their results indicate that combustion products such as PAHs and dioxin/furans directly attributable to the fire were not prevalent and were below project duration PAMP and annual PRG levels. All of the other compounds were either not detected above the laboratory reporting limits, below action limits, above action limits and attributable to background, or naturally occurring in soil.

The Aroclor 1260 results are associated with soil at Parcel E and not outside sources or background levels normally associated with soil. Previous remediation/mitigation activities were not specifically designed to address the Aroclor 1260 surface soil contamination. Additional investigations and measures should be taken to prevent the Aroclor 1260 from becoming airborne and to mitigate risks posed to potential receptors.

1.0 Introduction

IT Corporation (IT) was contracted by the United States Navy, Southwest Division (SWDiv) to perform environmental remediation and air monitoring activities under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), at the Parcel E industrial landfill at Hunters Point Shipyard (HPS) San Francisco, California (Figure 1, “Hunters Point Site Location and Parcel Location Map.”) The remedial activities ongoing in nearby Parcel B of the shipyard include a perimeter air monitoring program. On August 16, 2000, a brushfire burned on Parcel E (the former industrial landfill), shown in Figure 1. After the surface fire was extinguished, subsurface smoldering was discovered. An initial 24-hour ambient air sample was collected downwind of the fire area on August 31, 2000, and the air-monitoring network from Parcel B was relocated to the perimeter of Parcel E on September 8, 2000. IT was contracted by the Navy to smother and eliminate the subsurface smoldering by constructing a cap on top of the old landfill. The perimeter air monitoring program continued from September 8, 2000, until the cap was structurally complete on March 13, 2001.

The objective of the perimeter ambient air monitoring at Parcel E was to assist in protecting the public health of the nearby community and environment by documenting concentrations of specific air contaminants and comparing them to specified levels. Perimeter air monitoring was performed at Parcel E to identify any conditions requiring corrective measures necessary to assure that public health and the environment were not compromised by air emissions from the subsurface fire and landfill capping activities. The results from all air monitoring conducted at Parcel E are summarized in this report.

1.1 Report Format

This report provides a description of the air-monitoring network and summarizes monitoring results for the project. The report contains the following sections:

- Section 2.0 Background
- Section 3.0 Air Monitoring Program
- Section 4.0 Results Discussion
- Section 5.0 Quality Assurance
- Section 6.0 Conclusions
- Section 7.0 References

2.0 Background

A summary of background information is presented below, including a description and historical account of land use at the site. The majority of the information presented in this section was taken from a Public Health Assessment Report ([U.S. Public Health Service, 1994](#)).

2.1 Site Description

The HPS site is located in the southeastern portion of San Francisco, California, as shown in [Figure 1](#). It is bounded by an off-site residential and industrial community, the Hunters Point/Bayview Area, on the west. The site occupies a total of 965 acres (500 acres on land and 465 acres in the San Francisco Bay). Originally, the landmass of the HPS was less than 100 acres. The Navy increased the land mass of HPS primarily by using earth from the surrounding hills as fill.

Parcel E consists of approximately 168 acres and is located in the southwest and southern portions of the HPS site. It is bordered by the bay to the south and east, Parcels A and D to the north and east, and the community to the west. The industrial landfill comprises approximately 46 acres in the northwest portion of Parcel E.

The Hunters Point/Bayview community is composed of residential, commercial, and industrial properties. A natural gas-fueled steam generating power plant is located about 1 mile north of HPS. The Southeast Sewage Treatment Plant for the City and County of San Francisco is located approximately 1 mile west of HPS. The Candlestick Point State Recreation Area and 3Com Park Professional Sports Stadium are located approximately 1 mile southwest of the site. Other industrial operations, such as concrete recycling, take place in the general vicinity.

2.2 Site History

The site has been used for over 100 years as a ship repair facility. The northern and eastern shores of HPS were used for ship repair with dry-dock and berthing facilities; however, the southern shore was not used for shipping activities.

Currently, the Navy is conducting investigations and remediation of the shipyard under CERCLA.

The Parcel E industrial landfill is located in an area that was created when the bay margin was filled with quarried and artificial materials and was used until 1974 to dispose of industrial wastes. These wastes may have included materials such as spent petroleum products, solvents,

acids, caustics, detergent, paint sludge, sandblast grit, radioactive materials, and various other waste chemicals and liquids ([Tetra Tech EM, Inc., 1998](#)).

3.0 Air Monitoring Program

This air monitoring program was performed to assess the potential migration of air contaminants resulting from the subsurface landfill smoldering as well as from work activities at the site. The air sample collection and monitoring activities followed the procedures established in the Ambient Air Monitoring Plan (AAMP) for monitoring activities at Parcel E (IT, 2000) and the Perimeter Air Monitoring Plan (PAMP) for monitoring activities at Parcel B (IT, 1998a). This program consists of stationary-integrated air sample collection, meteorological data collection, and assessment of the data against established guidelines.

Integrated air sampling was conducted for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides and polychlorinated biphenyls (PCBs), metals in suspended particulate matter (metals), low resolution and high resolution dioxins/furans, chlorine compounds, phosgene, and radioactivity. Action levels for target analytes were established in the AAMP and are based on a combination of existing Action Levels in the Parcel B PAMP and EPA Preliminary Remediation Goals (PRGs) (EPA, 2000a) for all compounds that do not have an Action Level in the Parcel B PAMP. In addition to the PAMP Action Levels, all of the air monitoring data was also compared to the PRGs. The PRG data is presented for comparison purposes only.

All target compounds and associated PAMP Action Levels and PRGs are listed in Table 1, “Air Quality Target Compounds and Action Level Criteria for Integrated Sampling.” The PAMP averaging period identifies the length of time the monitoring data were be averaged for comparisons with the PAMP Action Level. The EPA cancer and chronic PRG values are based on annual average concentrations.

Action levels are used to determine if the ambient air monitoring results constitute a potential health risk. Even though most of the action levels are based on project average concentrations, results were compared against the action levels on a daily basis. If the results exceeded the action levels, steps were taken to reduce the concentration of the contaminant.

Meteorological monitoring was conducted using the existing Parcel B meteorological station to collect data including wind speed, horizontal wind direction, ambient temperature, barometric pressure, and precipitation. Meteorological data were used in sampler flow calculations and to evaluate the air monitoring analytical results based on predominant wind direction.

The AAMP, which incorporated the Parcel B PAMP, was reviewed and approved by the Base Realignment and Closure Cleanup which is composed of the Navy, the EPA, the California Regional Water Quality Control Board, and the Department of Toxic Substances Control. The PAMP provides guidelines for the performance of perimeter air monitoring during the environmental restoration activities conducted at Parcel B and is the basis for perimeter monitoring activities at Parcel E.

3.1 Air Sampling Program

Parcel E air samples were collected at seven air sampling stations (Sample Stations A through G) at six perimeter locations as shown in [Figure 2](#), “Air Monitoring Facility Locations.” The locations were sited to assist in determining whether air contaminants were migrating from Parcel E toward residential and commercial receptors. Stations were not established along the southern edge of Parcel E near the bay because there are no nearby receptors in this direction. Station D was placed as near to the smoldering area of the landfill as possible to maximize potential detections of fire-related contaminants. Station G, collocated with Station D, was used to collect duplicate integrated samples to confirm the precision of sample collection. Sampling stations were located in areas clear of obstacles (e.g., trees, structures, etc.) at least two meters above the ground, on a flat base that allowed free flow of weather elements (precipitation and wind). The high-volume air sampling instruments were protected from the elements by stainless steel housings with air inlets that permitted air flow to sample collection media. Exhaust flow for the polyurethane foam (PUF) samplers was directed away from the inlet to prevent recycling of air.

Because of the unknown nature of the emissions, each sample was analyzed for all possible compounds for each analytical category. The analytical method used for each compound category is presented in the following table:

Compound Group	Analytical Method
Pesticides	EPA Method TO4A
PCBs	EPA Method TO4A
SVOCs	EPA Method TO13A
VOCs	EPA Method TO14A
Metals	EPA Methods IO2.1, 3.1, and 3.5
Dioxin/Furan (low resolution)	EPA Method TO-09A (modified)
Dioxin/Furan (high resolution)	EPA Method TO-09A
Chlorine Compounds	EPA SW-846 Method 0051 (modified)
Phosgene	EPA Method TO-06 (modified)
Radioactivity	Gamma-ray spectrometry, gross alpha/gross beta

As a quality control measure, duplicate samples and field blanks were collected at a rate of at least 10 percent of the total number of integrated air samples collected at the site. Duplicates of samples collected at Station D were collected at adjacent Station G and submitted for laboratory analyses. Blanks were carried into the field during sample collection, again at a minimum rate of 10 percent, and submitted for laboratory analyses with the samples collected from the stations.

Air samples were submitted to K Prime, Inc., (State of California, Environmental Laboratory Accreditation/Certification Process No. 1532), located in Santa Rosa, California, under chain-of-custody (COC) protocol. Samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals, dioxins/furans, chlorine compounds, and phosgene in accordance with the AAMP. Samples collected for radioactive analysis were submitted to Barringer Laboratories, Inc., located in Golden, Colorado, under COC protocol.

The COC forms for all project samples are provided in Appendix A, “Chain-of Custody Forms.” The sample volumes shown on the COCs were calculated on spreadsheets using data collected in the field and the on-site meteorological station. The volume calculation sheets are provided in Appendix B, “Volume Calculation Sheets.”

3.1.1 Project Schedule

A project timeline is presented in [Table 2](#), “Project Timeline.” Initial monitoring for VOCs, SVOCs, metals, pesticides, PCBs, and low-resolution dioxins/furans was conducted at a single station downwind of the fire area on August 31, 2000. A six-station (Stations A-F) monitoring network began daily sampling on September 8, 2000. Initial pesticide, PCB, and low resolution dioxin/furan samples were taken during the September 8 through 9 sampling period, and initial VOC and metal samples were taken during the September 9 through 10 sampling period. The total suspended particulates (TSP) samplers used for sampling metal from September 17 through 18 were used to sample for radioactivity instead of metals. High-resolution dioxin/furan sampling began September 16 through 17 and continued every 8 days for five sampling periods through October 18 through 19. Chlorine compound and phosgene daily sampling began September 19 through 20.

The monitoring program was scaled back after results from the first month of daily monitoring were reviewed. The only SVOC detected above the PAMP Action Level was bis-2-ethylhexyl phthalate. This compound has been routinely detected in 1998, 1999, and 2000 was in the Parcel B ambient air monitoring program. Because this compound is ubiquitous and has been detected in the Hunters Point ambient air before the fire, it is unlikely to be a by-product of the

fire. Therefore, SVOC monitoring was discontinued after the October 17 through 18 sampling period.

Pesticide and low resolution dioxin/furan monitoring was discontinued after the October 17 through 18 sampling period. No pesticides were detected with the exception of a single detection of endrin (Station F) during the September 9 through 10 sampling period. There were no detections of low-resolution dioxins/furans.

High resolution dioxin/furan monitoring was discontinued after the October 18 through 19 sampling period. Of 29 sampling events, only one 24-hour sample resulted in an exceedence of the PRG, which is based on an annual average concentration. The average dioxin/furan concentration at each sample station was less than 30 percent of the PRG.

Chlorine compound and phosgene monitoring continued daily until October 6 through 7. Except for particulate chlorides, attributed to sea salt spray from the bay, there were no detections. Following procedures established in the Parcel B PAMP for nondetected compounds, the sampling frequency was reduced to every second or third day. After continued nondetections in each sample, chlorine compounds and phosgene sampling was discontinued after the October 19 through 20 sampling period.

After the October 20 through 21 sampling period, VOC and metal monitoring frequency was reduced to approximately every 3 to 5 days. Up to that time, the only metal compound detected in excess of the PAMP action level was manganese, and the only VOC compound detected in excess of the PAMP action level was benzene. Benzene, a byproduct of gasoline combustion, was detected at concentrations that are similar to background levels observed at the Bay Area Air Quality Management District (BAAQMD) Arkansas Street Monitoring Station in San Francisco and that were relatively consistent between monitoring stations. Therefore, it is unlikely that the fire was a source of benzene emissions.

No monitoring occurred from November 22 through 27 as field activities were suspended so that monitoring equipment could be serviced and maintained after prolonged daily sampling. Due to inclement weather, reduced field work, and the Christmas and New Years holidays, monitoring occurred only during a single sampling period (January 5 through 6) between December 15 and January 29. From January 29 through March 13, PCB, VOC, and metal samples were taken approximately every 4 days.

The daily air monitoring activities are detailed in the Field Activity Daily Logs presented in Appendix C, “Field Activity Daily Logs.”

3.1.2 PUF Samplers

PUF samplers were used to collect SVOC, pesticide, PCB, and low-resolution dioxin/furan data on PUF filters. A second set of PUF samplers was used to collect high-resolution dioxin/furan data on PUF filters. Each sample was taken over a 24-hour period. The filters were analyzed for SVOCs following EPA Method TO-13A (EPA, 1999a), for pesticides and PCBs following EPA Method TO-4A (EPA, 1999a), for low-resolution dioxins/furans following a modified EPA Method TO-09A (EPA, 1999a), and for high-resolution dioxins/furans following EPA Method TO-09A (EPA, 1999a).

3.1.3 TSP Samplers

TSP samplers were used to collect total suspended particulate on glass or quartz fiber filters. Each sample was taken over a 24-hour period. The filters were analyzed for metals according to EPA Methods IO 2.1, 3.1, and 3.5 (EPA, 1999b). The filters collected September 17 through 18 were analyzed for radioactivity using gamma-ray spectrometry and gross alpha/beta.

3.1.4 Volatile Organic Compound Samplers

VOC samplers utilized Summa canisters equipped with integrated mass flow controllers to collect ambient air samples. Each sample was taken over a 24-hour period. The air in each canister was analyzed for VOCs following EPA Method TO-14A (EPA, 1999a).

3.1.5 Chlorine Compound and Phosgene Samplers

Midget impingers and sampling pumps were used to collect particulate chloride, hydrogen chloride gas, chlorine gas, and phosgene samples. Chlorine compound samples were taken over a 24-hour period and phosgene samples were taken over a 1-hour period. During most 24-hour sampling periods, two phosgene samples were taken. The chlorine compound samples were analyzed using a modified EPA SW-846 Method 0051 (EPA, 1996). Phosgene samples were analyzed using a modified version of EPA Method TO-06 (EPA, 1999a).

The phosgene and chlorine samples are less quantitative in nature than the PUF and TSP samples because the large difference in volumes collected. The typical chlorine sample volume was 1.3 to 1.5 m³ and the typical phosgene sample volume was 0.05 m³. These volumes are substantially lower than the typical 35 m³ PUF sample volume and 1,800 m³ TSP sample volume.

3.2 Meteorological Data

The Meteorological Monitoring Station consists of a 10-meter tower with mounted instruments and a rain gauge. The tower was constructed at the site to obtain continuously recorded (on a 5-second basis) local climatic data. The station is located in Parcel B as shown in [Figure 1](#). Wind speed, horizontal wind direction, ambient temperature, barometric pressure, and rainfall data were collected and were used to evaluate ambient air monitoring results, to determine upwind and downwind sampling locations, and to calculate actual air volume of samples.

The meteorological data is summarized for each day that samples were collected and is presented in Appendix D, "Meteorological Data." Wind rose plots are presented for each day that samples were collected and provide graphic representations of the frequency of wind direction and speed. From the wind roses, the predominant wind direction (i.e., the direction from which the wind was blowing) for the period can be used to determine the upwind and downwind stations for the sample period.

Wind roses for each day (that samples were collected), each month, and project duration are presented in Appendix E, "Wind Rose Plots." In general, during September, October, and March, the predominant wind was from the west. During these periods, Sampling Station A was upwind and Sampling Stations D, E, and G were downwind. During the months of November, December, January, and February, the wind was more variable with the most predominant directions being the west, north, and southeast. During these periods, each of the sampling stations could be upwind, downwind, or sidewind.

The potential differences between the wind direction data at Parcel B (where the meteorological tower is sited) and Parcel E (where the ambient air monitoring occurred) were examined. The approximate wind direction was recorded by field sampling crews on an hourly basis from September 16, 2000 through October 22, 2000. The field data were collected by observing a ribbon attached to the top of a 4-foot (1.3 meters) tall stake in the ground. Depending on the crew, the data was recorded in either 45-degree or 90-degree increments. A total of 466 instantaneous hourly observations was recorded. Discounting the 83 observations of calm conditions, 383 hourly observations were compared on an hour-by-hour basis to the data collected at the meteorological tower. The averaged-observed wind direction (direction from which the wind is blowing) was 250 degrees, and the average wind direction recorded at the tower was 235 degrees, with an average difference of 14 degrees. These data indicate that a qualitative correlation exists between the two data sets. A quantitative or absolute correlation cannot be made because the hourly Parcel B data are based on an average of 720 readings (one every 5 seconds), whereas the Parcel E data are based on a single observation. Further, the

Parcel B data were obtained from 10 meters above ground level compared to the Parcel E data that were obtained at 1.3 meters above ground level. The wind direction data for both parcels during this period is presented in Appendix F, Wind Correlation Data.”

4.0 Results Discussion

The results of the air-sampling program are discussed in the following sections. Data from the single station sampling conducted downwind of the fire area on August 31, 2000, are presented separately from the seven-station daily sampling that began September 9, 2000.

All laboratory analytical reports are included in Appendix G, "Laboratory and Radioactivity Reports/Results": Appendix G-1, "Laboratory Analytical Reports, – VOC/TSP/PUF," contains the VOC/PUF/TSP reports; Appendix G-2, "Laboratory Analytical Reports – High Resolution Dioxin/Furan," contains the high-resolution dioxin/furan reports; Appendix G-3, "Laboratory Analytical Reports – Chlorine/Phosgene," contains the chlorine compound and phosgene reports; and Appendix G-4, "Radioactivity Report/Results," contains the radiological compound report.

4.1 Initial Sampling

An initial 24-hour sample was collected directly downwind of the fire area on August 31, 2000, through September 1, 2000. This station was located approximately where Station D was later located. Three ambient air samplers were located at this station. A PUF ambient air sampler for pesticides; PCBs; SVOCs, including polynuclear aromatic hydrocarbons (PAH); and low-resolution dioxins/furans was operated for approximately 24 hours at the station. In addition, a TSP ambient air sampler for metals, and an automated volatile organic canister sampler (AVOCS) for VOCs was operated simultaneously with the PUF sampler. A summary of the sampling results from the initial sampling conducted between August 31 and September 1, 2000, is presented in [Table 3](#), "Initial Sampling Results." The laboratory report is included in Appendix G-1.

All compounds were below action levels except for benzene. There were no detections of pesticides, PCBs, low-resolution dioxin/furan, or metals, except for copper. PAHs of several types were detected at levels at least one order of magnitude below action levels. There were no detections of benzo(a)pyrene or related compounds such as benzo(a)anthracene.

Benzene was detected at 4.63 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), which is above the PAMP and EPA PRG action level on a daily basis. The highest level observed during the Parcel E monitoring program was 5.91 $\mu\text{g}/\text{m}^3$ at Station F during the February 1 and 2 sampling period.

The average level observed during the program was 1.3 $\mu\text{g}/\text{m}^3$. The 1999 mean benzene concentration observed at the BAAQMD Monitoring Station on Arkansas Street in San

Francisco was 2.07 µg/m³. The results for this sample are consistent with what was observed during the Parcel E monitoring program.

This initial sample did not reveal detections of compounds other than those expected from smoldering brush and vegetation.

4.2 Monitoring Program Results

The daily sampling program data is summarized by sampling station for all detected compounds in Appendix H, “Results Summary by Compound.” The project average concentration for each detected compound by sampling station is presented in [Table 4](#), “Project Average Air Concentrations of Detected Compounds.” When calculating averages, one-half the reporting limit was assumed for all undetected compounds ([EPA, 2000b](#)). All target compounds that were not detected in any sample at any monitoring station during the entire sampling program are listed in [Table 5](#), “Non-Detected Target Compounds.”

Daily summary tables, shown in Appendix I-1, “Daily Detection Summaries – VOC/TSP/PUF,” and Appendix I-2, “Daily Detection Summaries – High Resolution Dioxins/Furans,” present sampling data for each detected compound during the sampling period. The high-resolution dioxin/furan data in Appendix I-2 is presented as 2,3,7,8-TCDD equivalents. This is calculated by summing the products of each dioxin/furan congener by its congener-specific 2,3,7,8-TCDD equivalent using international toxic equivalent factors ([Cal EPA, 1999](#)).

During the project, the daily laboratory results, which are presented as 24-hour average concentrations, were compared to the PAMP Action Levels and the PRGs even though most of the PAMP Action Levels and all of the PRGs are based on long-term averages (quarter, project duration, or annual). [Table 6](#), “Concentrations above PAMP/PRG – Daily Basis,” lists, by sample date, each time results were above a PAMP Action Level or a PRG on a daily basis. These data are presented by compound group in [Table 7](#), “Results Summary,” showing whether any target compound group were detected, and, if detected, whether it was detected above or below the PAMP Action Level or PRG.

4.2.1 Compounds Exceeding Applicable PAMP or PRG Action Levels

[Table 8](#), “PAMP Action Level Exceedances,” identifies compounds that exceeded the applicable 24-hour or project duration averaging period PAMP Action Level. [Table 9](#), “PRG Exceedances,” identifies compounds that exceeded the annual average PRGs. The potential emission sources of each compound listed in these tables and the likelihood that observed concentrations are influenced for site emissions are discussed below.

Benzene

Benzene was detected in 306 samples of 388 samples (47 at Station A, 49 at Station B, 45 at Station C, 51 at Station D, 49 at Station E, 46 at Station F, and 19 at Station G) during 60 sampling periods. The minimum detection was $0.32 \mu\text{g}/\text{m}^3$ and the maximum detection was $5.91 \mu\text{g}/\text{m}^3$.

The project duration PAMP and annual average PRG action level of 0.32 and $0.25 \mu\text{g}/\text{m}^3$, respectively, were exceeded at all seven sampling stations. The average observed concentration at each station ranged from $0.94 \mu\text{g}/\text{m}^3$ to $1.21 \mu\text{g}/\text{m}^3$.

Benzene was above the PAMP and PRG action level on a daily basis in 306 samples (47 at Station A, 49 at Station B, 45 at Station C, 51 at Station D, 49 at Station E, 46 at Station F, and 19 at Station G) of the 306 detected samples. The action levels for benzene are at or below the laboratory reporting limits, thus any detection is above the action level.

Benzene is a by-product of gasoline combustion and is common in urban areas. The BAAQMD monitors the benzene concentration at a site on Arkansas Street in San Francisco. In 1999, the mean benzene concentration was $2.07 \mu\text{g}/\text{m}^3$ (Air Resources Board [ARB], 1999). Because the project duration average benzene concentrations at each sampling station were less than the background concentrations as measured by the air district, it is unlikely that emissions from Parcel E contributed significantly to the observed data. Additionally, on a daily basis, benzene concentrations did not vary much between sampling stations, further indicating that the site was not a significant source of benzene emissions.

Bis(2-ethylhexyl)phthalate

Bis(2-ethylhexyl)phthalate was detected in 160 of 231 samples (28 at Station A, 26 at Station B, 22 at Station C, 30 at Station D, 21 at Station E, 23 at Station F, and 10 at Station G) during 36 sampling periods. The minimum detection was $0.0006 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.7440 \mu\text{g}/\text{m}^3$.

The project average PAMP of $0.018 \mu\text{g}/\text{m}^3$ was exceeded at Sampling Stations A, B, D, and E. None of the station averages exceeded the PRG action level of $0.48 \mu\text{g}/\text{m}^3$. The average observed concentration at each station ranged from $0.0074 \mu\text{g}/\text{m}^3$ to $0.038 \mu\text{g}/\text{m}^3$.

Bis(2-ethylhexyl)phthalate was above the PAMP action level of $0.018 \mu\text{g}/\text{m}^3$ on a daily basis in 19 samples (2 at Station A, 2 at Station B, 2 at Station C, 3 at Station D, 4 at Station E, 4 at Station F, and 2 at Station G) of the 160 detected samples. Bis(2-ethylhexyl)phthalate was above

the PRG action level of $0.48 \mu\text{g}/\text{m}^3$ on a daily basis in three samples (1 at Station A, 1 at Station B, and 1 at Station F) of the 160 detected samples.

Bis(2-ethylhexyl)phthalate is found in many materials from polyvinyl chloride (PVC) pipe to rubber gloves. The concentrations shown in the sampling results could easily be influenced by the presence of these materials nearby the sampling stations. In addition, the concentrations at each station for each sampling period are relatively constant. Bis(2-ethylhexyl)phthalate as well as other phthalates were detected several times in the field blank ranging in concentrations from 0.0036 to $.006 \mu\text{g}/\text{m}^3$. The site was not likely a significant emitter of bis(2-ethylhexyl)phthalate.

Manganese

Manganese was detected in 321 of 376 samples (43 at Station A, 48 at Station B, 47 at Station C, 57 at Station D, 53 at Station E, 54 at Station F, and 19 at Station G) over 59 sampling periods. The minimum detection was $0.012 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.294 \mu\text{g}/\text{m}^3$.

Manganese exceeded the 24-hour PAMP action level of $0.05 \mu\text{g}/\text{m}^3$ in 120 samples (9 at Station A, 8 at Station B, 16 at Station C, 43 at Station D, 16 at Station E, 19 at Station F, and 9 at Station G) of the 321 detected samples. The annual average PRG of $0.051 \mu\text{g}/\text{m}^3$ was exceeded at Sampling Stations D and G. The average observed concentration at each station ranged from $0.026 \mu\text{g}/\text{m}^3$ to $0.088 \mu\text{g}/\text{m}^3$.

Manganese was above the PRG action level of $0.051 \mu\text{g}/\text{m}^3$ on a daily basis in 119 samples (9 at Station A, 8 at Station B, 16 at Station C, 43 at Station D, 15 at Station E, 19 at Station F, and 9 at Station G) of the 321 detected samples.

Most of the exceedences of the 24-hour PAMP action level were observed in Station D, which is predominately a downwind station. A majority of the exceedences occurred during September and early October when substantial earth moving activities were occurring. Manganese is a common constituent of the local soil and is often observed in the Parcel B air monitoring. The source of manganese emissions is most likely fugitive dust from the surrounding area. It is unlikely that the fire was a source of manganese emission.

Arsenic

Arsenic was detected in 41 of 376 samples (4 at Station A, 3 at Station B, 9 at Station C, 14 at Station D, 3 at Station E, 6 at Station F, and 2 at Station G) over 27 sampling periods. The minimum detection was $0.002 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.005 \mu\text{g}/\text{m}^3$.

The project duration PAMP action level of $0.014 \mu\text{g}/\text{m}^3$ was not exceeded at any monitoring station. The annual average PRG action level of $0.00045 \mu\text{g}/\text{m}^3$ was exceeded at all seven sampling stations. The average observed concentration at each station ranged from $0.00105 \mu\text{g}/\text{m}^3$ to $0.00142 \mu\text{g}/\text{m}^3$. In most cases, arsenic was detected at the reporting limit ($0.002 \mu\text{g}/\text{m}^3$). In addition, one-half the detection limit is $2\frac{1}{2}$ times greater than the PRG, which makes the average concentration calculations automatically exceed the PRG action level.

Arsenic was not above the PAMP action level of $0.014 \mu\text{g}/\text{m}^3$ on a daily basis in any of the 41 detected samples. Arsenic was above the PRG action level of $0.00045 \mu\text{g}/\text{m}^3$ on a daily basis in 41 samples (4 at Station A, 3 at Station B, 9 at Station C, 14 at Station D, 3 at Station E, 6 at Station F, and 2 at Station G) of the 41 detected samples. The PRG action level for arsenic is a factor of 5 below the laboratory reporting limits; thus, any detection is above the action level.

Most of the detections of arsenic were observed in Station D, which is predominately a down-wind station. A majority of the detections occurred during mid September and early October when substantial earth moving activities were occurring. Arsenic is a component of the local soil. The arsenic concentrations did not vary much over time or between sampling stations. The source of arsenic emissions is most likely fugitive dust from activities involving local and imported soil. It is unlikely that the fire was a source of arsenic emissions.

Beryllium

Beryllium was detected in one of 376 samples (at Station C) over one sampling period. The air concentration detected was $0.013 \mu\text{g}/\text{m}^3$. The project duration PAMP action level of $0.03 \mu\text{g}/\text{m}^3$ was not exceeded at any monitoring station. The annual average PRG action level of $0.0008 \mu\text{g}/\text{m}^3$ was exceeded at sampling Station C. The calculated average concentration of $0.00627 \mu\text{g}/\text{m}^3$ resulted from the fact that average concentration calculations were performed using one-half the reporting limit of $0.012 \mu\text{g}/\text{m}^3$ ($0.006 \mu\text{g}/\text{m}^3$) for all of the other non-detect sampling periods. This automatically causes the average concentration to exceed the PRG action level because the reporting limit is a factor of 15 times the PRG.

Beryllium was not above the PAMP action level of $0.03 \mu\text{g}/\text{m}^3$ on a daily basis for the one detected sample. Beryllium was above the PRG action level of $0.0008 \mu\text{g}/\text{m}^3$ on a daily basis in the one detected sample at Station C. The PRG action level for beryllium is a factor of 15 below the laboratory reporting limits; thus, any detection is above the action level.

Total Chromium

Chromium was detected in five of 376 samples (1 at Station C, 1 at Station D, 1 at Station E, 1 at Station F, and 1 at Station G) over three sampling periods. The minimum detection was $0.083 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.503 \mu\text{g}/\text{m}^3$.

The project duration PAMP action level of $0.042 \mu\text{g}/\text{m}^3$ was not exceeded at any station. The annual average PRG of $0.00016 \mu\text{g}/\text{m}^3$ was exceeded at sampling Stations C, D, E, F, and G. The average observed concentration at each station ranged from $0.0260 \mu\text{g}/\text{m}^3$ to $0.0344 \mu\text{g}/\text{m}^3$. There was only one detection at each of the stations. In addition, the reporting limit ($0.0250 \mu\text{g}/\text{m}^3$) is 150 times greater than the PRG, which makes the average concentration calculations using one-half the reporting limit exceed the PRG action level.

Chromium was above the PAMP action level of $0.042 \mu\text{g}/\text{m}^3$ on a daily basis in five samples (1 at Station C, 1 at Station D, 1 at Station E, 1 at Station F, and 1 at Station G) of the 5 detected samples. Chromium was above the PRG action level of $0.00016 \mu\text{g}/\text{m}^3$ on a daily basis in five samples (1 at Station C, 1 at Station D, 1 at Station E, 1 at Station F, and 1 at Station G) of the 5 detected samples. The PRG action level for chromium is a factor of 150 below the laboratory reporting limits; thus, any detection is above the action level.

The chromium detections occurred in late February and early March 2001 during three of the last four sampling events. The chromium appears to be unrelated to the fire because the detections occurred when the landfill cap was almost complete.

The PRG for total chromium is based on an assumed chromium VI to chromium III ratio of 1:6. Because chromium VI is much more toxic than chromium III, the PRG may not be applicable to the observed total chromium concentrations. Further, the sampling method used only reports total chromium. Information as to the site-specific chromium VI to chromium III ratio is not available to accurately determine whether the PRG was actually exceeded. To be conservative, because this information is not available, we have reported the results assuming the chromium VI to chromium III ratio is 1:6.

Carbon Tetrachloride

Carbon tetrachloride was detected in 69 of 388 samples (8 at Station A, 13 at Station B, 9 at Station C, 9 at Station D, 13 at Station E, 11 at Station F, and 6 at Station G) over 27 sampling periods. The minimum detection was $0.629 \mu\text{g}/\text{m}^3$ and the maximum detection was $1.636 \mu\text{g}/\text{m}^3$. There is no established PAMP action level for carbon tetrachloride. The annual average PRG of

0.13 $\mu\text{g}/\text{m}^3$ was exceeded at all seven sampling stations. The average observed concentration at each station ranged from 0.396 $\mu\text{g}/\text{m}^3$ to 0.466 $\mu\text{g}/\text{m}^3$.

Carbon tetrachloride was above the PRG action level of 0.13 $\mu\text{g}/\text{m}^3$ on a daily basis in 69 samples (8 at Station A, 13 at Station B, 9 at Station C, 9 at Station D, 13 at Station E, 11 at Station F, and 6 at Station G) of the 69 detected samples. The PRG action level for carbon tetrachloride is almost a factor of 5 below the laboratory reporting limits; thus, any detection is above the action level.

The BAAQMD monitors the carbon tetrachloride concentration at a site on Arkansas Street in San Francisco. In 1996, the last year for which a mean concentration of carbon tetrachloride was available, the mean concentration was 0.49 $\mu\text{g}/\text{m}^3$ (ARB, 1996). The median carbon tetrachloride concentration observed in 1997 and 1998 was 0.69 $\mu\text{g}/\text{m}^3$ (ARB, 1996). Because the project duration average carbon tetrachloride concentrations at each sampling station were less than the background concentrations as measured by the air district, it is unlikely that emissions from Parcel E contributed significantly to the observed data.

Chloroform

Chloroform was detected in two of 388 samples (1 at Station C, and 1 at Station D) over 2 sampling periods. The minimum detection was 1.170 $\mu\text{g}/\text{m}^3$ and the maximum detection was 1.220 $\mu\text{g}/\text{m}^3$. There is no established PAMP action level for chloroform. The annual average PRG action level of 0.084 $\mu\text{g}/\text{m}^3$ for chloroform was exceeded at sampling Stations C and D. The average observed concentration at each station ranged from 0.551 $\mu\text{g}/\text{m}^3$ to 0.601 $\mu\text{g}/\text{m}^3$. There was only 1 detection at each station. In addition, the reporting limit (1.0 $\mu\text{g}/\text{m}^3$) is 12 times greater than the PRG, which makes the average concentration calculations using one-half the reporting limit exceed the PRG action level.

Chloroform was above the PRG action level of 0.084 $\mu\text{g}/\text{m}^3$ on a daily basis in 2 samples (1 at Station C and 1 at Station D) of the 2 detected samples. The PRG action level for chloroform is almost a factor of 12 below the laboratory reporting limits; thus, any detection is above the action level.

Aroclor 1260 (PCB)

Aroclor 1260 (PCB) was detected in 34 of 596 samples (1 at Station A, 4 at Station E, and 29 at Station F) over 29 sampling periods. The minimum detection was 0.003 $\mu\text{g}/\text{m}^3$ and the maximum detection was 0.043 $\mu\text{g}/\text{m}^3$. The project duration PAMP action level of 0.01 $\mu\text{g}/\text{m}^3$ was not exceeded at any station. The annual average PRG action level of 0.0034 $\mu\text{g}/\text{m}^3$ was

exceeded at sample Station F. The average observed concentrations ranged from 0.00153 $\mu\text{g}/\text{m}^3$ to 0.00429 $\mu\text{g}/\text{m}^3$.

Aroclor 1260 was above the PAMP action level of 0.01 $\mu\text{g}/\text{m}^3$ on a daily basis in nine samples (at Station F) of the 34 detected samples. Aroclor 1260 was above the PRG action level of 0.0034 $\mu\text{g}/\text{m}^3$ on a daily basis in 27 samples (2 at Station E and 25 at Station F) of the 34 detected samples.

Almost all of the Aroclor 1260 detections were observed at monitoring Station F, which is located in the southeast corner of the landfill area near the bay. This station is near a known area in parcel E that has surface soil contamination of Aroclor 1260. The detections of Aroclor 1260 did not occur until landfill capping activities began. The highest concentrations are associated with periods of heavy activity, which disturbed surface soil along the southern edge of Parcel E near the bay. As soon as the Aroclor 1260 results were received from the laboratory, steps were taken to try to minimize dust generation and activities in the Aroclor 1260 contamination area. These measures were somewhat effective in that concentrations began to drop. An area contaminated with Aroclor 1260 was unknowingly chosen as the landfill liner laydown area because of the lack of other usable space near the cap. Concentrations of Aroclor 1260 ranging to 0.0432 $\mu\text{g}/\text{m}^3$ were observed at Station F during periods, in which the landfill liner was delivered and retrieved. Additional mitigation measures were immediately undertaken to place gravel in the contaminated area, and this reduced airborne concentrations.

The last sampling period that Aroclor 1260 concentrations were above the PAMP action level was October 4 and 5. Concentrations of Aroclor 1260 above the PRG action level on a daily basis continued until sampling period December 14 and 15. Because of detections of Aroclor 1260, sampling for PCBs was continued throughout the monitoring program.

The Aroclor 1260 results are directly associated with Parcel E and are not coming from outside sources or from background levels normally associated with soil. The results for all of the other compounds that exceeded action levels can be attributed in whole or part to ambient air background concentrations or naturally occurring metals in soil. The landfill cap did not address the Aroclor 1260 surface soil contamination issue. Therefore, it is likely that wind and activities in this area will continue to allow Aroclor 1260 to become airborne. This continues to pose a risk to receptors.

4.2.2 Compounds Not Exceeding Applicable PAMP or PRG Action Levels

The following sections discuss results for compounds that did not exceed a project average PAMP or PRG action level or a 24-hour PAMP action level. The discussion is grouped by class of compound: SVOCs, metals, VOCs, pesticides, PCBs, dioxins/furans, chlorine compounds, and phosgene. Compounds that exceeded the project average PAMP or PRG action level or a 24-hour PAMP action level were discussed above.

Occasionally, some results for the compounds discussed below were above a project average PAMP or PRG action level on a daily basis. Results above the project average PAMP action level on a daily basis are shown in [Table 10](#), “Concentrations above PAMP Action Level – Daily Basis.” Results above the annual PRG action level on a daily basis are shown in [Table 11](#), “Concentrations above PRG – Daily Basis.” These results do not indicate that an action level was exceeded. They are provided as a reference to understand an individual day of sampling results.

4.2.2.1 Semi-Volatile Organic Compounds

Two hundred thirty-one samples were analyzed for SVOCs during 38 sampling periods. Of the 59 target compounds, 45 were not detected in any samples (see [Table 5](#)). Key compounds that were not detected include pentachlorophenol as well as benzo(a)pyrene and related compounds. The detection statistics for each of the detected compounds is presented in [Table 12](#), “Detected Compound Statistics,” and summarized below.

2-Methylnaphthalene

2-Methylnaphthalene was detected in two of 231 samples (both at Station A) over two sampling periods. The minimum detection was $0.00316 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.00342 \mu\text{g}/\text{m}^3$. There is no PAMP or PRG action level for this compound.

Acenaphthylene

Acenaphthylene was detected in 36 of 231 samples (4 at Station A, 1 at Station B, 2 at Station C, 18 at Station D, 1 at Station F, and 10 at Station G) over 19 sampling periods. The minimum detection was $0.000687 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.01230 \mu\text{g}/\text{m}^3$. There is no PAMP or PRG action level for this compound.

Anthracene

Anthracene was detected in 27 of 231 samples (2 at Station A, 12 at Station D, 3 at Station E, 4 at Station F, and 6 at Station G) over 19 sampling periods. The minimum detection was $0.00325 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.01370 \mu\text{g}/\text{m}^3$. Anthracene was not above the

PRG action level of 1100 $\mu\text{g}/\text{m}^3$ on a daily basis for the 27 detected samples. There is no PAMP action level for this compound.

Butyl Benzyl Phthalate

Butyl benzyl phthalate was detected in 50 of 231 samples (9 at Station A, 8 at Station B, 7 at Station C, 9 at Station D, 11 at Station E, 4 at Station F, and 2 at Station G) over 19 sampling periods. The minimum detection was 0.00098 $\mu\text{g}/\text{m}^3$ and the maximum detection was 0.24600 $\mu\text{g}/\text{m}^3$. Butyl benzyl phthalate was not above the PRG action level of 730 $\mu\text{g}/\text{m}^3$ on a daily basis for the 50 detected samples. There is no PAMP action level for this compound.

Dibenzofuran

Dibenzofuran was detected in 41 of 231 samples (1 at Station A, 1 at Station C, 22 at Station D, 4 at Station E, 4 at Station F, and 9 at Station G) over 24 sampling periods. The minimum detection was 0.00086 $\mu\text{g}/\text{m}^3$ and the maximum detection was 0.0100 $\mu\text{g}/\text{m}^3$. Dibenzofuran was not above the PRG action level of 15 $\mu\text{g}/\text{m}^3$ on a daily basis for the 41 detected samples. There is no PAMP action level for this compound.

Diethylphthalate

Diethylphthalate was detected in 211 of 231 samples (34 at Station A, 34 at Station B, 28 at Station C, 33 at Station D, 35 at Station E, 33 at Station F, and 14 at Station G) over 38 sampling periods. The minimum detection was 0.0006 $\mu\text{g}/\text{m}^3$ and the maximum detection was 0.4440 $\mu\text{g}/\text{m}^3$. Diethylphthalate was not above the PRG action level of 2,900 $\mu\text{g}/\text{m}^3$ on a daily basis for the 211 detected samples. There is no PAMP action level for this compound.

Di-n-butylphthalate

Di-n-butylphthalate was detected in 206 of 231 samples (33 at Station A, 32 at Station B, 34 at Station C, 31 at Station D, 29 at Station E, 36 at Station F, and 11 at Station G) over 38 sampling periods. The minimum detection was 0.0005 $\mu\text{g}/\text{m}^3$ and the maximum detection was 0.0820 $\mu\text{g}/\text{m}^3$. Di-n-butylphthalate was not above the PRG action level of 370 $\mu\text{g}/\text{m}^3$ on a daily basis for the 206 detected samples. There is no PAMP action level for this compound.

Di-n-octylphthalate

Di-n-octylphthalate was detected in one of 231 samples (at Station A) over one sampling period. The air concentration detected was 0.0119 $\mu\text{g}/\text{m}^3$. Di-n-octylphthalate was not above the PRG action level of 73 $\mu\text{g}/\text{m}^3$ on a daily basis for the one detected sample. There is no PAMP action level for this compound.

Fluoranthene

Fluoranthene was detected in 64 of 231 samples (6 at Station A, 4 at Station B, 5 at Station C, 25 at Station D, 7 at Station E, 6 at Station F, and 11 at Station G) over 29 sampling periods. The minimum detection was $0.00065 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.02110 \mu\text{g}/\text{m}^3$. Fluoranthene was not above the PRG action level of $150 \mu\text{g}/\text{m}^3$ on a daily basis for the 64 detected samples. There is no PAMP action level for this compound.

Fluorene

Fluorene was detected in 63 of 231 samples (1 at Station A, 2 at Station B, 7 at Station C, 25 at Station D, 9 at Station E, 6 at Station F, and 13 at Station G) over 29 sampling periods. The minimum detection was $0.00127 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.01690 \mu\text{g}/\text{m}^3$. Fluorene was not above the PRG action level of $150 \mu\text{g}/\text{m}^3$ on a daily basis for the 63 detected samples. There is no PAMP action level for this compound.

Naphthalene

Naphthalene was detected in three of 231 samples (1 at Station A, 1 at Station B, and 1 at Station C) over one sampling period. The minimum detection was $0.00298 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.00416 \mu\text{g}/\text{m}^3$. Naphthalene was not above the PRG action level of $3.1 \mu\text{g}/\text{m}^3$ on a daily basis for the three detected samples. There is no PAMP action level for this compound.

Phenanthrene

Phenanthrene was detected in 201 of 231 samples (30 at Station A, 27 at Station B, 30 at Station C, 35 at Station D, 31 at Station E, 34 at Station F, and 14 at Station G) over 37 sampling periods. The minimum detection was $0.0009 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.1000 \mu\text{g}/\text{m}^3$. There is no PAMP or PRG action level for this compound.

Pyrene

Pyrene was detected in 44 of 231 samples (5 at Station A, 2 at Station B, 3 at Station C, 15 at Station D, 4 at Station E, 7 at Station F, and 8 at Station G) over 20 sampling periods. The minimum detection was $0.00058 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.02080 \mu\text{g}/\text{m}^3$. Pyrene was not above the PRG action level of $110 \mu\text{g}/\text{m}^3$ on a daily basis for the 44 detected samples. There is no PAMP action level for this compound.

4.2.2.2 Metal Compounds

Three hundred and seventy-four samples were analyzed for metals over 62 sampling periods. Of the 19 target compounds, seven were not detected in any samples (see [Table 5](#)). Key

compounds that were not detected include antimony, cadmium, and selenium. The detection statistics for each of the detected compounds is presented in [Table 12](#) and summarized below.

Aluminum

Aluminum was detected in 24 of 374 samples (3 at Station A, 5 at Station C, 8 at Station D, 1 at Station E, 5 at Station F, and 2 at Station G) over 15 sampling periods. The minimum detection was $2.314 \mu\text{g}/\text{m}^3$ and the maximum detection was $7.139 \mu\text{g}/\text{m}^3$. Aluminum was not above the PAMP action level of $150 \mu\text{g}/\text{m}^3$ on a daily basis in any of the 24 detected samples. Aluminum was above the PRG action level of $5.1 \mu\text{g}/\text{m}^3$ on a daily basis in three samples (two at Station D and one at Station F) of the 24 detected samples.

Barium

Barium was detected in 10 of 374 samples (2 at Station D, 3 at Station E, and 5 at Station F) over seven sampling periods. The minimum detection was $0.122 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.199 \mu\text{g}/\text{m}^3$. Barium was not above the PRG action level of $0.52 \mu\text{g}/\text{m}^3$ on a daily basis for the 10 detected samples. There is no PAMP action level for this compound.

Cobalt

Cobalt was detected in two of 374 samples (both at Station D) over two sampling periods. The minimum detection was $0.012 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.013 \mu\text{g}/\text{m}^3$. There is no PAMP or PRG action level for this compound.

Copper

Copper was detected in 371 of 374 samples (57 at Station A, 58 at Station B, 55 at Station C, 61 at Station D, 58 at Station E, 60 at Station F, and 22 at Station G) over 62 sampling periods. The minimum detection was $0.013 \mu\text{g}/\text{m}^3$ and the maximum detection was $1.016 \mu\text{g}/\text{m}^3$. Copper was not above the PAMP action level of $10 \mu\text{g}/\text{m}^3$ on a daily basis in any of the 371 detected samples. There is no PRG action level for this compound.

Lead

Lead was detected in 119 of 374 samples (5 at Station A, 7 at Station B, 24 at Station C, 36 at Station D, 20 at Station E, 21 at Station F, and 6 at Station G) over 42 sampling periods. The minimum detection was $0.024 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.281 \mu\text{g}/\text{m}^3$. Lead was not above the PAMP action level of $1.5 \mu\text{g}/\text{m}^3$ on a daily basis in any of the 119 detected samples. There is no PRG action level for this compound.

Molybdenum

Molybdenum was detected in three of 374 samples (1 at Station E, 1 at Station F, and 1 at Station G) over two sampling periods. The minimum detection was $0.028 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.124 \mu\text{g}/\text{m}^3$. There is no PAMP or PRG action level for this compound.

Nickel

Nickel was detected in three of 374 samples (1 at Station A, 1 at Station E, and 1 at Station F) over three sampling periods. The minimum detection was $0.145 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.319 \mu\text{g}/\text{m}^3$. Nickel was not above the PAMP action level of $10 \mu\text{g}/\text{m}^3$ on a daily basis in any of the three detected samples. There is no PRG action level for this compound.

Zinc

Zinc was detected in four of 374 samples (2 at Station D and 2 at Station F) over four sampling periods. The minimum detection was $0.248 \mu\text{g}/\text{m}^3$ and the maximum detection was $0.360 \mu\text{g}/\text{m}^3$. Zinc was not above the PAMP action level of $1,050 \mu\text{g}/\text{m}^3$ on a daily basis in any of the four detected samples. There is no PRG action level for this compound.

4.2.2.3 Volatile Organic Compounds

Three hundred and eighty-eight samples were analyzed for VOCs over 64 sampling periods. Of the 37 target compounds, 19 were not detected in any samples (see [Table 5](#)). Key compounds that were not detected include vinyl chloride. The detection statistics for each of the detected compounds is presented in [Table 12](#) and summarized below.

1,2,4-Trimethylbenzene

1,2,4-Trimethylbenzene was detected in 29 of 388 samples (8 at Station A, 4 at Station B, 6 at Station C, 3 at Station D, 5 at Station E, 2 at Station F, and 1 at Station G) over 15 sampling periods. The minimum detection was $2.56 \mu\text{g}/\text{m}^3$ and the maximum detection was $77.20 \mu\text{g}/\text{m}^3$. 1,2,4-Trimethylbenzene was above the PRG action level of $6.2 \mu\text{g}/\text{m}^3$ on a daily basis in three samples (one at Station A and two at Station C) of the 29 detected samples. There is no PAMP action level for this compound.

1,3,5-Trimethylbenzene

1,3,5-Trimethylbenzene was detected in three of 388 samples (1 at Station A, 1 at Station C, and 1 at Station E) over three sampling periods. The minimum detection was $5.10 \mu\text{g}/\text{m}^3$ and the maximum detection was $13.70 \mu\text{g}/\text{m}^3$. 1,3,5-Trimethylbenzene was above the PRG action level

of $6.2 \mu\text{g}/\text{m}^3$ on a daily basis in two samples (one at Station A and one at Station C) of the three detected samples. There is no PAMP action level for this compound.

Chlorobenzene

Chlorobenzene was detected in one of 388 samples (at Station C) over one sampling period. The air concentration detected was $0.875 \mu\text{g}/\text{m}^3$. Chlorobenzene was not above the PRG action level of $62 \mu\text{g}/\text{m}^3$ on a daily basis for the one detected sample. There is no PAMP action level for this compound.

Chloroethane

Chloroethane was detected in four of 388 samples (1 at Station A, 1 at Station C, 1 at Station D, and 1 at Station E) over four sampling periods. The minimum detection was $0.530 \mu\text{g}/\text{m}^3$ and the maximum detection was $1.800 \mu\text{g}/\text{m}^3$. Chloroethane was not above the PRG action level of $2.3 \mu\text{g}/\text{m}^3$ on a daily basis for the four detected samples. There is no PAMP action level for this compound.

Chloromethane

Chloromethane was detected in 55 of 388 samples (6 at Station A, 11 at Station B, 6 at Station C, 9 at Station D, 10 at Station E, 11 at Station F, and 2 at Station G) over 22 sampling periods. The minimum detection was $0.410 \mu\text{g}/\text{m}^3$ and the maximum detection was $10.900 \mu\text{g}/\text{m}^3$. Chloromethane was above the PRG action level of $1.1 \mu\text{g}/\text{m}^3$ on a daily basis in 19 samples (3 at Station A, 6 at Station B, 2 at Station C, 3 at Station D, 3 at Station E, 1 at Station F, and 1 at Station G) of the 55 detected samples. There is no PAMP action level for this compound. All of the results that were above the PRG action level on a daily basis occurred from November 2000 through March 2001.

Cis-1,2-dichloroethane

Cis-1,2-dichloroethane was detected in two of 388 samples (1 at Station D, and 1 at Station G) over two sampling periods. The minimum detection was $2.100 \mu\text{g}/\text{m}^3$ and the maximum detection was $6.300 \mu\text{g}/\text{m}^3$. Cis-1,2-dichloroethane was not above the PRG action level of $37 \mu\text{g}/\text{m}^3$ on a daily basis for the two detected samples. There is no PAMP action level for this compound.

Dichlorodifluoromethane

Dichlorodifluoromethane was detected in 379 of 388 samples (59 at Station A, 59 at Station B, 56 at Station C, 60 at Station D, 62 at Station E, 60 at Station F, and 23 at Station G) over 64 sampling periods. The minimum detection was $1.00 \mu\text{g}/\text{m}^3$ and the maximum detection was

6.13 $\mu\text{g}/\text{m}^3$. Dichlorodifluoromethane was not above the PRG action level of 210 $\mu\text{g}/\text{m}^3$ on a daily basis for the 379 detected samples. There is no PAMP action level for this compound.

Ethylbenzene

Ethylbenzene was detected in 141 of 388 samples (26 at Station A, 23 at Station B, 22 at Station C, 22 at Station D, 21 at Station E, 20 at Station F, and 7 at Station G) over 33 sampling periods. The minimum detection was 0.43 $\mu\text{g}/\text{m}^3$ and the maximum detection was 12.30 $\mu\text{g}/\text{m}^3$. Ethylbenzene was not above the PRG action level of 1,100 $\mu\text{g}/\text{m}^3$ on a daily basis for the 141 detected samples. There is no PAMP action level for this compound.

Methylene Chloride

Methylene chloride was detected in 21 of 388 samples (4 at Station A, 4 at Station B, 1 at Station C, 1 at Station D, 3 at Station E, and 8 at Station F) over 12 sampling periods. The minimum detection was 1.700 $\mu\text{g}/\text{m}^3$ and the maximum detection was 4.800 $\mu\text{g}/\text{m}^3$. Methylene chloride was above the PRG action level of 4.1 $\mu\text{g}/\text{m}^3$ on a daily basis in two samples (1 at Station B and 1 at Station F) of the 21 detected samples. There is no PAMP action level for this compound.

Styrene

Styrene was detected in 29 of 388 samples (8 at Station A, 2 at Station B, 2 at Station C, 4 at Station D, 4 at Station E, 8 at Station F, and 1 at Station G) over 15 sampling periods. The minimum detection was 0.426 $\mu\text{g}/\text{m}^3$ and the maximum detection was 5.920 $\mu\text{g}/\text{m}^3$. Styrene was not above the PRG action level of 1,100 $\mu\text{g}/\text{m}^3$ on a daily basis for the 29 detected samples. There is no PAMP action level for this compound.

Tetrachloroethene

Tetrachloroethene was detected in 38 of 388 samples (5 at Station A, 7 at Station B, 5 at Station C, 5 at Station D, 8 at Station E, 5 at Station F, and 3 at Station G) over 16 sampling periods. The minimum detection was 0.680 $\mu\text{g}/\text{m}^3$ and the maximum detection was 3.700 $\mu\text{g}/\text{m}^3$. Tetrachloroethene was not above the PAMP action level of 35 $\mu\text{g}/\text{m}^3$ on a daily basis in any of the 38 detected samples. Tetrachloroethene was above the PRG action level of 3.3 $\mu\text{g}/\text{m}^3$ on a daily basis in four samples (1 at Station A, 1 at Station C, 1 at Station D, and 1 at Station F) of the 38 detected samples.

Toluene

Toluene was detected in 355 of 388 samples (58 at Station A, 60 at Station B, 54 at Station C, 54 at Station D, 57 at Station E, 51 at Station F, and 21 at Station G) over 64 sampling periods.

The minimum detection was $0.75 \mu\text{g}/\text{m}^3$ and the maximum detection was $25.80 \mu\text{g}/\text{m}^3$. Toluene was not above the PRG action level of $400 \mu\text{g}/\text{m}^3$ on a daily basis for the 355 detected samples. There is no PAMP action level for this compound.

Trichloroethene

Trichloroethene was detected in four of 388 samples (2 at Station B, 1 at Station F, and 1 at Station G) over four sampling periods. The minimum detection was $0.70 \mu\text{g}/\text{m}^3$ and the maximum detection was $6.30 \mu\text{g}/\text{m}^3$. Trichloroethene was above the PRG action level of $1.1 \mu\text{g}/\text{m}^3$ on a daily basis in two samples (1 at Station F and 1 at Station G) of the four detected samples. There is no PAMP action level for this compound.

Trichlorofluoromethane

Trichlorofluoromethane was detected in 261 of 388 samples (36 at Station A, 47 at Station B, 35 at Station C, 43 at Station D, 51 at Station E, 36 at Station F, and 13 at Station G) over 61 sampling periods. The minimum detection was $1.10 \mu\text{g}/\text{m}^3$ and the maximum detection was $3.00 \mu\text{g}/\text{m}^3$. Trichlorofluoromethane was not above the PRG action level of $730 \mu\text{g}/\text{m}^3$ on a daily basis for the 261 detected samples. There is no PAMP action level for this compound.

Xylenes

Xylenes (m-xylene, o-xylene, and p-xylene) were detected in 277 of 388 samples (46 at Station A, 49 at Station B, 42 at Station C, 42 at Station D, 44 at Station E, 38 at Station F, and 16 at Station G) over 56 sampling periods. The minimum detection was $0.87 \mu\text{g}/\text{m}^3$ and the maximum detection was $46.30 \mu\text{g}/\text{m}^3$. Xylenes were not above the PAMP action level of $4,350 \mu\text{g}/\text{m}^3$ on a daily basis in any of the 277 detected samples. Xylenes were not above the PRG action level of $730 \mu\text{g}/\text{m}^3$ on a daily basis for the 277 detected samples.

4.2.2.4 Pesticides and Polychlorinated Biphenyls

Five hundred ninety-six samples were analyzed for PCBs over 101 sampling periods.

Two hundred thirty-one samples were analyzed for pesticides over 38 sampling periods. Of the 26 target pesticide and PCB compounds, 24 were not detected in any samples (see [Table 5](#)).

Other than the one detection of endrin noted below, there were no other detections of pesticides during the entire program. Thus, airborne pesticides do not appear to be an issue at Parcel E.

The detection statistics for each of the detected compounds is presented in [Table 12](#) and summarized below.

Endrin

Endrin (pesticide) was detected in one of 231 samples (at Station F) over one sampling period. The air concentration detected was $0.583 \mu\text{g}/\text{m}^3$. Endrin was not above the PRG action level of $1.1 \mu\text{g}/\text{m}^3$ on a daily basis for the one detected sample. There is no PAMP action level for this compound.

4.2.2.5 Dioxins and Furans

Twenty-nine samples were analyzed for high-resolution dioxin/furan over five sampling periods. Dioxin/furan was detected in every sample and was reported as 2,3,7,8-TCDD Equivalent. The detection statistics are presented in [Table 12](#). The minimum 2,3,7,8-TCDD Equivalent was 0.00024 picograms per cubic meter (pg/m^3) and the maximum was $0.04588 \text{ pg}/\text{m}^3$. 2,3,7,8-TCDD Equivalent was just above the PRG action level of $0.045 \text{ pg}/\text{m}^3$ on a daily basis in one sample (at Station D on October 19) of the 29 detected samples. There is no PAMP action level for this compound.

The 2,3,7,8-TCDD equivalent results for Station D on October 19 was $0.04588 \text{ pg}/\text{m}^3$ which is barely above the PRG action level on a daily basis. Additionally, 2,3,7,8-TCDD was detected once in the 29 samples.

Additionally, 231 samples were analyzed using a low-resolution dioxin/furan method. There were no detections of dioxins/furans in any of these samples.

4.2.2.6 Chlorine Compounds

One hundred and four samples were analyzed for chlorine compounds over 18 sampling periods. Of the three target compounds, chlorine and hydrogen chloride were not detected in any samples (see [Table 5](#)). The detection statistics for particulate chloride is presented in [Table 12](#) and summarized below.

Although the reported sample volumes of the chlorine sample are not precise, the laboratory results are valid since chlorine and hydrogen chloride was not detected in any sample. Variations in the collected volumes would only affect the concentration of any reported results; it would not affect whether or not chlorine as compounds are detected.

Particulate Chloride

Particulate chloride was detected in 73 samples (14 at Station A, 13 at Station B, 12 at Station C, 13 at Station D, 11 at Station E, and 10 at Station F) over 16 sampling periods. The minimum detection was $1.90 \mu\text{g}/\text{m}^3$ and the maximum detection was $23.50 \mu\text{g}/\text{m}^3$. The particulate chloride

is most likely due to salt spray from the bay and is not an indication of chlorine or hydrogen chloride presence.

4.2.2.7 Phosgene

Phosgene was not detected in any of the 216 samples collected over 36 sampling periods.

Although the reported sample volumes of the phosgene samples are not precise, the laboratory results are valid since phosgene was not detected in any sample. Variations in the collected volumes would only affect the concentration of any reported results; it would not affect whether or not phosgene is detected.

4.2.2.8 Radiological Compounds

Radioactivity was measured for six samples taken from one sampling period for TSP (metals) on September 17 and 18. Metals analysis was not conducted on the samples as they were used up in the radioactivity analysis. The results are summarized in Appendix G, “Radioactivity Report/Results.”

4.2.2.9 Tentatively Identified Compounds

The laboratory’s gas chromatography/mass spectrometer analysis identified several compounds that were not in the list of target compounds ([Table 1](#)). The data for these compounds, designated as tentatively identified compounds (TIC), is presented in [Table 13](#), “Tentatively Identified Compounds.” The TIC data has also been included in all other data summaries. TICs were usually detected below method reporting limits. The data are qualitative in nature and only signify the potential presence of a compound.

5.0 *Quality Assurance*

To ensure that the air monitoring data was of high quality, quality assurance quality control procedures were established and followed throughout the project. Duplicate and field blank samples were collected to validate field sampling procedures. Samplers were maintained and calibrated according to a rigid schedule so that an accurate sample volume could be calculated.

The volume calculation sheets (Appendix B) filled out in the field have been checked for accuracy. In cases where the volume differed more than 1 percent from the value calculated in the field, the corrected volume was forwarded to the laboratory and the laboratory issued a revised report. All data in this report represent the most recent laboratory data.

5.1 *Air Sampling Equipment Quality Assurance/Quality Control*

Integrated air sampling equipment was monitored for flow rate during sample periods and calibrated if needed as summarized below. A summary of all monitoring data not meeting standards is presented in [Table 14](#), “Quality Assurance Summary.” These data are also flagged in the data summary tables and appendices referenced in [Section 4.0](#). The following samples were designated as “not meeting quality assurance standards”: 1) samples taken after a sampler required calibration and before it was calibrated, 2) samples taken, for which no daily or hourly sampler log sheets are available, 3) samples taken, for which the daily flow check did not meet specifications, 4) samples for which the sampler log sheets were annotated with “representative sample only,” or 5) TSP samples where the volume collected was out of the acceptable range of 1,600 to 2,400 m³ and PUF samples where the volume collected was less than the minimum acceptable volume of 300 m³.

Any potential inaccuracy would affect the calculated sample volume and thus the concentration; however, it would not affect whether or not a compound is present.

5.1.1 *PUF Sampler*

The PUF samplers underwent a seven-point calibration and set point determination initially as well as periodically during the monitoring period. The records of each calibration and set point determination are presented in Appendix J-1, “Low Resolution PUF 7-Point Calibrations and Set Point Determinations.” The PUF 7-point calibrations and set point determinations were performed during initial placement of the sampler and after motor brushes were changed or whenever daily flow checks indicated that the sampler was operating outside the calibration

curve. Motor brushes were usually changed after 500 hours of use (approximately every 20 to 60 days depending on the sampling frequency).

A single point PUF flow check using a calibrated orifice standard was conducted prior to each sampling event unless a PUF 7-point calibration had just been performed. This assured that the samplers were operating within their respective calibration curves. A summary of the PUF calibrations and flow checks is presented in [Table 15](#), “Low Resolution PUF 7-Point and Flow Check Quality Assurance.” All data collected after a sampler failed a flow check and before it was recalibrated are considered as not meeting quality assurance standards and are noted as such in the data tables. The records of each PUF flow check are presented in Appendix K-1, “Low Resolution PUF Daily Flow Checks.” Continual or hourly flow data is presented in Appendix L, “PUF Wheel Charts and Magnehelic® Hourly Readings,” as wheel charts (continual) or Magnehelic® pressure gauge readings (hourly). Air sampling log sheets are provided in Appendix M-1, “Air Sampling Logs – VOC/TSP/PUF.”

5.1.2 High Resolution PUF Sampler

The PUF samplers underwent an initial seven-point calibration and set point determination. The record of each calibration and set point determination are presented in Appendix J-2, “High Resolution PUF 7-Point Calibrations and Set Point Determinations.” The high-resolution units did not require any maintenance due to their infrequent usage, and all daily flow checks met quality assurance criteria, therefore, additional calibrations were not necessary.

A single point PUF flow check using a calibrated orifice standard was conducted prior to each sampling event unless a PUF 7-point calibration had just been performed. This assured that the samplers were operating within their respective calibration curves. A summary of the PUF calibrations and flow checks is summarized in [Table 16](#), “High Resolution PUF Quality Assurance.” The PUF flow check records are presented in Appendix K-2, “High Resolution PUF Daily Flow Checks.” Data collected during days for which the flow check data is missing are marked as not meeting quality assurance standards. Hourly flow data are presented in Appendix L as Magnehelic® pressure gauge readings. Air sampling log sheets are provided in Appendix M-2, “Air Sampling Logs – High Resolution PUF.”

5.1.3 TSP Sampler

The TSP samplers were initially, as well as, periodically calibrated during the monitoring period. Calibrations were performed after samplers were moved or after maintenance. The calibration records are presented in Appendix N, “TSP Calibration Sheets,” and are summarized in [Table 17](#), “TSP Quality Assurance.” All data collected after a sampler failed a calibration are

considered not meeting quality assurance standards and are noted as such in the data tables. Continual flow data are presented in Appendix O, “TSP Wheel Charts,” as wheel charts. Air sampling log sheets are provided in Appendix M-1.

5.1.4 Volatile Organic Compounds Sampler

The vacuum/pressure and flow rate was monitored and recorded during each sampling period. The final pressure was recorded on a COC form. The analytical laboratory measured the pressure upon receipt, compared the pressures, and recorded the percentage difference. This provided an additional check for the site equipment and efficiency of sample collection vessels. The mass flow meters were inspected at each sampling event and were returned to the laboratory when necessary. Cleaning was conducted as needed, typically monthly. Air sampling log sheets are provided in Appendix M-1.

5.1.5 Chlorine/Phosgene Samplers

The flow rates on the mini sampling pumps were monitored at the beginning and end of each sampling period, and the average flow from the two readings was used to calculate the total sample volume. The air sampling log sheets are provided in Appendix M-3, “Air Sampling Logs – Chlorine/Phosgene.”

5.2 Field Quality Control Data

Quality control of the field sampling procedures was monitored by submitting field blank and field duplicate samples. Field blanks accompanied the actual sample media into the field approximately every second sampling day for all samplers except for the chlorine and phosgene samplers, for which no field blanks were used. The blank samples were left in the field during the monitoring period, then collected, and sent to the laboratory along with the active samples. Field duplicate data was obtained at Station G, which was collocated with Station D. Samples were taken at Station G approximately every second sampling day.

5.2.1 Field Blanks

The field blank results are presented in [Table 18](#), “Field Blank Results.” The initial PUF field blanks in September contained detectable quantities of Di-n-butylphthalate, Bis(2-ethylhexyl)phthalate, Diethylphthalate, butylbenzylphthalate, and phenanthrene. These detections were several orders of magnitude below action level except for bis(2-ethylhexyl)phthalate, for which the highest detection in the blank was one-third of the action level. These detections in the initial PUF samples can potentially be attributed to the use of new PUF sampler media.

Benzene was detected in two field blank samples. While toluene was detected once. Copper was detected in one metals field blank while low levels of OCDD was detected in the high resolution dioxin/furan field blank. The number and concentration of these detections in the field blanks do not indicate any contamination problems in the sampling media and handling techniques in the Parcel E perimeter ambient air monitoring program.

5.2.2 Field Duplicate

The field duplicate data are presented in [Table 19](#), “Field Duplicate Summary.” Of all the compounds analyzed in each sample, there were 238 instances in which a compound was detected at both Stations D and G during the same sampling period. The relative percent difference (RPD) between the Station D and Station G data was calculated. The absolute value of the relative difference was less than 50 percent in 76 percent of the samples, indicating acceptable field sampling precision. The remaining 24 percent of the RPD values exceeded the 50 percent criteria due to low concentration values in samples and the associated lack of analytical accuracy.

5.3 Laboratory Data Quality Control

Ambient air samples collected at Hunters Point project site under Parcel E were analyzed for toxic organic and nonorganic compounds using EPA Methods TO-4, TO-9, TO-14, and IO-2.1/IO-3.1/IO-3.5. The analytical data was evaluated per testing method requirements of *Compendium of Methods for Determination of Toxic Organic and Inorganic Compounds in Ambient Air* and laboratory internal quality control.

Quality control samples included field and laboratory quality control samples. Field quality control samples included field duplicate and field blank samples. Laboratory control samples included method blank, laboratory control sample (LS), laboratory control sample duplicate (LCSD), matrix spike (MS), and matrix spike duplicate (MSD).

All of the samples were analyzed within the holding time requirements specified for each applicable analytical method.

None of the method blank samples had contaminants of concern at or above the specified detection limit.

The percent recoveries for all analytes of concern in LCS and LCSD, and RPD value between LCS and LCSD recoveries, were within the acceptance criteria, with the exceptions noted below.

- For reports 2001-030809 and 2001-031213, for metals analysis by EPA Method IO-2.1/IO-3.1/IO-3.5, recovery of beryllium in LCSD were 128 percent, which was slightly above the acceptance criteria of 75 to 125 percent.
- For reports 102021 and 102425, for metals analysis by EPA Method IO-2.1/IO-3.1/IO-3.5, RPD value between arsenic recoveries in LCS and LCSD was 21.33, which was marginally above the control limit of 20.

The percent recoveries for all analytes of concern in MS and MSD, and RPD value between MS and MSD recoveries, were within the acceptance criteria, with the exceptions noted below.

- For reports 102728 and 110102, for VOCs analysis by EPA Method TO-14, RPD value between 1,1-Dichloroethene recoveries in MS and MSD was 50.8, which was above the acceptance limit of 25.

All of the internal standard and surrogate standard recoveries were within the acceptance criteria, with the exceptions noted below.

- For report 91617, for dioxins and furans analysis by EPA Method TO-09, surrogate (recovery) standard (13C-1,2,3,7,8,9-HxCDF) recoveries in method blank and a spike sample were 68.1 and 68.4 percent, respectively, which were slightly below the lower control limit of 70 percent.
- For report 101011HR, for dioxins and furans analysis by EPA Method TO-09, surrogate (recovery) standard (13C-1,2,3,7,8,9-HxCDF) recoveries in spike sample and five field samples (station A, B, C, D, F) were in the range of 56.1 and 69 percent, which were below the lower control limit of 70 percent.

Quality of the data is not affected due to the above listed recoveries and RPD values outside of the acceptance criteria.

Overall, data are of acceptable quality and usable for the purposes of this project.

5.4 Meteorological Instrumentation

Meteorological instruments were disassembled, inspected, lubricated, and reassembled approximately every 4 to 6 weeks. This schedule was adopted as standard operating procedure to prevent corrosion from airborne salt and high humidity. No events were recorded during the monitoring period that affected meteorological data. Meteorological station information and certification records are included in Appendix P, "Meteorological Information and Certification."

6.0 Conclusions

During the Parcel E perimeter ambient air monitoring program, over 2,400 different analyses were conducted on the more than 1,700 samples collected from the seven station monitoring network from September 8, 2000 through March 13, 2001. Of the more than 150 target compounds or classes of compounds, 98 were not detected at any time during the program. Monitoring Stations A, B, and C, located along the western and northern parcel boundaries, tended to have fewer detections and observed concentrations than Stations D, E, F, and G, because they are usually upwind of Parcel E.

Key compounds and classes of compounds not detected include the following:

- No pesticides in 231 samples (except for one detection of endrin below action levels)
- No chlorine or hydrogen chloride in 104 samples
- No phosgene in 216 samples
- No low resolution dioxins/furans in 231 samples
- No benzo(a)pyrene in 231 samples
- No cadmium in 374 samples
- No vinyl chloride in 388 samples

Key compounds that were detected, but all of the detections and averages were below PAMP and PRG action levels were as follows:

- Lead
- Nickel
- High resolution dioxins/furans (one out of 29 results was just above the PRG action level on a daily basis 0.04588 pg/m^3 vs. 0.045 pg/m^3)

The following discussion relates to compounds that exceeded a project average or 24-hour PAMP or PRG action level.

Beryllium, chloroform, and chromium were detected in one, two and five samples, respectively. The project average concentration that was calculated for these compounds exceeded the PRG action level because one-half the reporting limit was used in the average calculation for each

sample for compounds that were not detected above the laboratory reporting limit. In the case of these three compounds, the reporting limits are substantially higher than the PRG action level. Therefore, even one detection would cause the project average calculation to be performed and automatically exceed the PRG action level as happened for these compounds.

Benzene and carbon tetrachloride were frequently detected, and their observed average concentrations exceeded project duration PAMP or PRG action levels. The detections of these compounds at the levels observed can be attributed to ambient air background levels. The project average benzene and carbon tetrachloride concentrations were less than the background benzene and carbon tetrachloride concentration reported for the BAAQMD ambient air monitoring station on Arkansas Street in San Francisco. Therefore, it is unlikely that the landfill fire or capping activities contributed to the observed concentration of these two compounds.

Arsenic and manganese were frequently detected, and their observed average and 24-hour concentration exceeded project duration PAMP or PRG action levels or 24-hour PAMP action levels. These metals are naturally occurring in soil, and observed concentrations of these metals can be correlated to the timing of earth moving activities during cap construction as well as wind direction. Manganese was frequently observed above action levels during the Parcel B perimeter air monitoring program in 1998, 1999, 2000, and 2001. Manganese appears to be coming from the local and imported soil at Hunters Point. Average arsenic concentrations did not exceed the project duration PAMP action level. The PRG action level for arsenic is 5 times lower than the reporting limit; thus, average concentration calculations using one-half the reporting limit for samples with undetected data automatically shows an exceedence. Arsenic was detected at the reporting limit numerous times and appears to also be coming from soil.

Bis(2-ethylhexyl)phthalate was frequently detected, and its observed average concentration exceeded project duration PAMP action levels. None of the station averages exceeded the PRG action level. This compound is ubiquitous in nature and is associated with PVC plastic. This compound was frequently observed above action levels during the Parcel B perimeter air monitoring program in 1998, 1999, 2000, and 2001. The landfill fire does not appear to be the source of this compound.

Aroclor 1260 (PCB) was detected in 34 of 596 samples (one at Station A, four at Station E, and 29 at Station F). The project duration PAMP action level of $0.01 \mu\text{g}/\text{m}^3$ was not exceeded at any station. The annual average PRG action level of $0.0034 \mu\text{g}/\text{m}^3$ was exceeded at sample Station F with an average observed concentration of $0.00429 \mu\text{g}/\text{m}^3$. Aroclor 1260 was above the PAMP action level of $0.01 \mu\text{g}/\text{m}^3$ on a daily basis in nine samples (nine at Station F). Aroclor 1260 was

above the PRG action level of $0.0034 \mu\text{g}/\text{m}^3$ on a daily basis in 27 samples (two at Station E and 25 at Station F).

Almost all of the Aroclor 1260 detections were observed at monitoring Station F, which is located in the southeast corner of the landfill area near the bay. This station is near a known area of Parcel E that has surface soil contamination of Aroclor 1260. The detections of Aroclor 1260 did not occur until landfill capping activities began. The highest concentrations are associated with periods of heavy activity, which disturbed surface soil along the southern edge of Parcel E near the bay. As soon as the Aroclor 1260 results were received from the laboratory, steps were taken to minimize dust generation and activities in the Aroclor 1260 contamination area.

Review of the test results for all samples collected during the Parcel E perimeter ambient air monitoring program indicates the major concern is Aroclor 1260. The detected compounds and their results indicate that combustion products, such as PAHs and dioxins/furans, directly attributable to the fire were not prevalent and were below project duration PAMP and annual PRG levels. All of the other compounds were either not detected above the laboratory reporting limits or were below action limits, or above action limits and were attributable to background, or naturally occurring in soil.

The Aroclor 1260 results are associated with soil at Parcel E and not outside sources or background levels normally associated with soil. Previous remediation/mitigation activities were not specifically designed to address the Aroclor 1260 surface soil contamination. Additional investigations and measures should be taken to prevent the Aroclor 1260 from becoming airborne and to mitigate risks posed to potential receptors by Aroclor 1260.

7.0 References

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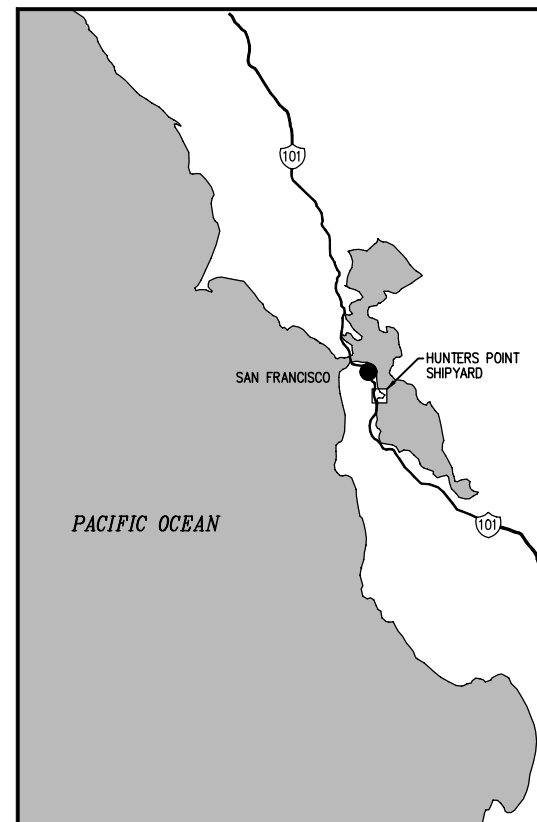
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FIGURES



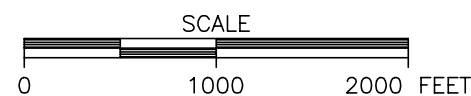
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SAN FRANCISCO BAY



LEGEND



METEOROLOGICAL STATION



HUNTERS POINT SHIPYARD
SAN FRANCISCO, CALIFORNIA

FIGURE 1

HUNTERS POINT SITE LOCATION
AND PARCEL LOCATION MAP

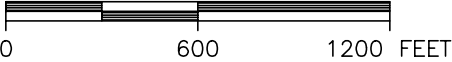


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LEGEND

- ⊕ AIR QUALITY STATION AND I.D. NUMBER
- * STATION G IS CO-LOCATED WITH STATION D

SCALE



HUNTERS POINT SHIPYARD
SAN FRANCISCO, CALIFORNIA

FIGURE 2
AIR MONITORING FACILITY LOCATIONS

TABLES

Table 1
Hunters Point Shipyard, Parcel E
Air Quality Target Compounds and Action Level Criteria for Integrated Sampling

Contaminant	PAMP Action Level (µg/m ³)	PAMP Averaging Period	EPA ^(k) Cancer PRG (µg/m ³)	EPA ^(k) Chronic PRG (µg/m ³)
Metals (particulate)				
Aluminum	150 ^c	24-hour TWA	na	5.1
Antimony	5 ^a	24-hour TWA	na	na
Arsenic	0.014	project duration	0.00045	na
Barium	na		na	0.52
Beryllium	0.03	project duration	0.0008	0.021
Cadmium	0.04	project duration	0.0011	na
Chromium (Total) **	0.042	project duration	0.00016	na
Cobalt	na		na	na
Copper	10 ^c	24-hour TWA	na	na
Lead	1.5 ^e	quarterly average	na	na
Manganese	0.05 ^b	24-hour TWA	na	0.051
Mercury	0.3 ^b	24-hour TWA	na	0.31
Molybdenum	na		na	na
Nickel	10 ^c	24-hour TWA	na	na
Selenium	na		na	na
Silver	na		na	na
Thallium	na		na	na
Vanadium	0.5 ^b	24-hour TWA	na	na
Zinc	1050 ^d	24-hour TWA	na	na
VOCs				
1,1,1-Trichloroethane	na		na	1000
1,1,2-Trichloroethane	na		0.12	15
1,1-Dichloroethane	na		na	520
1,1-Dichloroethene	1.4	project duration	0.038	33
1,1,2,2-Tetrachloroethane	na		0.033	220
1,2,4-Trimethylbenzene	na		na	6.2
1,2-Dibromoethane	na		0.0087	0.21
1,2-Dichlorobenzene	na		na	210
1,2-Dichloroethane	3	project duration	0.074	5.1
1,2-Dichloropropane	na		0.099	4.2
1,2,4-Trichlorobenzene	na		na	210
1,3,5-Trimethylbenzene	na		na	6.2
1,3-Dichlorobenzene	na		na	3.3
1,4-Dichlorobenzene	na		0.31	110
Benzene	0.32 ^j	project duration	0.25	6.2
Bromomethane	na		na	5.2
Carbon Tetrachloride	na		0.13	2.6
Chlorobenzene	na		na	62
Chloroethane	na		2.3	10000
Chloroform	na		0.084	0.31
Chloromethane	na		1.1	1900000000
Cis-1,2-Dichloroethene	na		na	37
Cis-1,3-Dichloropropene	na		0.052	21
Dichlorodifluoromethane	na		na	210
Dichlorotetrafluoroethane	na		na	na
Ethylbenzene	na		na	1100
Hexachlorobutadiene	na		0.086	0.73
Methylene Chloride	na		4.1	3100
Styrene	na		na	1100
Tetrachloroethene	35 ^d	24-hour TWA	3.3	420
Toluene	na		na	400
Trans-1,3-Dichloropropene	na		na	na
Trichloroethene	na		1.1	220
Trichlorofluoromethane	na		na	730
Trichlorotrifluoroethane	na		0.022	na
Vinyl Chloride	na		0.22	104
Xylenes (Total)	4350 ^c	24-hour TWA	na	730

Table 1
Hunters Point Shipyard, Parcel E
Air Quality Target Compounds and Action Level Criteria for Integrated Sampling

Contaminant	PAMP Action Level (µg/m ³)	PAMP Averaging Period	EPA ^(k) Cancer PRG (µg/m ³)	EPA ^(k) Chronic PRG (µg/m ³)
Pesticides/PCBs				
Aldrin	0.014	project duration	0.00039	0.11
4,4'-DDD	0.012 ^g	project duration	0.028	na
4,4'-DDE	0.009 ^g	project duration	0.02	na
4,4'-DDT	0.7	project duration	0.02	1.8
A-BHC	na		na	na
B-BHC	na		na	na
Chlordane	na		0.019	0.73
D-BHC	na		na	na
Dieldrin	na		0.00042	0.18
Endosulfan I	na		na	22
Endosulfan II	na		na	na
Endosulfan Sulfate	na		na	na
Endrin	na		na	1.1
Endrin Aldehyde	na		na	na
Heptachlor	na		0.0015	1.8
Heptachlor Epoxide	na		0.00074	0.047
Lindane	na		na	na
Methoxychlor	na		na	18
Toxaphene	na		0.006	na
PCBs (Aroclor 1016)	na		0.096	0.26
PCBs (Aroclor 1221, 1232, 1248)	na		0.0034	na
PCBs (Aroclor 1260, 1254, 1242)	0.01	project duration	0.0034	.073 (1254)
SVOCs				
2,4,5-Trichlorophenol	na		na	370
2,4,6-Trichlorophenol	na		0.62	na
2,4-Dichlorophenol	na		na	11
2,4-Dimethylphenol	na		na	73
2,4-Dinitrophenol	na		na	7.3
2,4-Dinitrotoluene	na		na	7.3
2-Chloronaphthalene	na		na	na
2-Chlorophenol	na		na	18
2-Methylnaphthalene	na		na	na
2-Methylphenol	na		na	180
2-Nitroaniline	na		na	0.21
2-Nitrophenol	na		na	na
3,3'-Dichlorobenzidine	na		0.015	na
3-Nitroaniline	na		na	na
4,6-Dinitro-2-Methylphenol	na		na	na
4-Bromophenyl Phenyl Ether	na		na	na
4-Chloro-3-Methylphenol	na		na	na
4-Chloroaniline	na		na	15
4-Chlorophenyl Phenyl Ether	na		na	na
4-Methylphenol	na		na	18
4-Nitroaniline	na		na	0.21
4-Nitrophenol	na		na	29
Acenaphthene	na		na	220
Acenaphthylene	na		na	na
Anthracene	na		na	1100
Benzo(a)anthracene	0.3 ^h	project duration	0.022	na
Benzo(a)pyrene	0.04 ^h	project duration	0.0022	na
Benzo(b)fluoranthene	0.3 ^h	project duration	0.022	na
Benzo(k)fluoranthene	0.8 ^h	project duration	0.22	na
Benzo(g,h,i)perylene	na		na	na
Benzyl Alcohol	na		na	1100
Bis(2-Chloroethyl)ether	na		0.0058	na
Bis(2-Chloroethoxy)methane	na		na	na
Bis(2-Chloroisopropyl)ether	na		0.19	150

Table 1
Hunters Point Shipyard, Parcel E
Air Quality Target Compounds and Action Level Criteria for Integrated Sampling

Contaminant	PAMP Action Level (µg/m ³)	PAMP Averaging Period	EPA ^(k) Cancer PRG (µg/m ³)	EPA ^(k) Chronic PRG (µg/m ³)
SVOCs - continued				
Bis(2-ethylhexyl)phthalate	0.018 ^g	project duration	0.48	80
Butyl Benzyl Phthalate	na		na	730
Chrysene	0.14	project duration	2.2	na
Dibenzo(a,h)anthracene	0.04 ^h	project duration	0.0022	na
Dibenzofuran	na		na	15
Diethylphthalate	na		na	2900
Dimethyl Phthalate	na		na	37000
Di-n-butylphthalate	na		na	370
Di-n-octyl phthalate	na		na	73
Fluoranthene	na		na	150
Fluorene	na		na	150
Hexachlorobenzene	na		0.0042	2.9
Hexachlorobutadiene	na		0.086	1.1
Hexachlorocyclopentadiene	na		na	0.073
Hexachloroethane	na		0.48	3.7
Indeno(1,2,3-cd)pyrene	0.14 ^h	project duration	0.022	na
Isophorone	na		7.1	730
Naphthalene	na		na	3.1
Nitrobenzene	na		na	2.1
N-Nitroso-di-n-propylamine	na		0.00096	na
N-Nitrosodipropylamine	0.04 ^g	project duration	na	na
Pentachlorophenol	na		0.056	110
Phenanthrene	na		na	na
Phenol	na		na	2200
Pyrene	na		na	110
High Resolution Dioxin/Furans				
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	na		na	na
2,3,7,8-Tetrachlorodibenzofuran	na		na	na
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	na		0.000000045	na
Heptachlorodibenzofuran (Total)	na		na	na
Heptachlorodibenzo-p-dioxins (Total)	na		na	na
Hexachlorodibenzofuran (Total)	na		na	na
Hexachlorodibenzo-p-dioxins (Total)	na		0.0000015	na
Octachlorodibenzofuran	na		na	na
Octachlorodibenzo-p-dioxin	na		na	na
Pentachlorodibenzofuran (Total)	na		na	na
Chlorine Compounds				
Particulate Chloride	na		na	na
Hydrogen Chloride Gas	na		na	na
Chlorine Gas	na		na	na
OTHER				
Phosgene	na		na	na

Notes:

Source: IT, 1998a.

USEPA, Region 9, Residential Preliminary Remediation Goal (PRG) for air is presented to evaluate the sensitivity of the analytical results, it is not used for risk assessment or risk characterization.

- a) No inhalation RfD, RfC, or carcinogenic slope factor. Also, no OSHA PEL. Based on NIOSH REL/100.
- b) Based on RfC.
- c) No inhalation RfD or RfC. Based on OSHA PEL/100 for criteria.
- d) No inhalation RfD or RfC. Criteria based on oral RfC, assuming 20 m³/day inhalation rate and 100% absorption.
- e) National Ambient Air Quality Standard.
- f) No current RfC or slope factor. Based on slope factor value withdrawn from HEAST tables in Ref. 1.
- g) Calculated by using the oral carcinogenic slope factor and assuming 20 m³/day inhalation rate and 100% absorption.
- h) Calculated from inhalation slope factor listed in EPA 1993, assuming 20 m³/day inhalation rate and 100% absorption.
- i) No inhalation RfD or OSHA PEL. Used OSHA PEL for coke oven emissions divided by a factor of 100.
- j) This is the minimum detection limit for benzene using the specified T0-14 method which is higher than the action level criteria in Specification 01420 of 0.1 µg/m³.
- k) PRG values based on annual average concentration.
- * PRG for thallium sulfate used since this is the thallium compound used for pesticidal use.
- ** PAMP Action Level and Cancer PRG are based on assumed total chromium ratio of 1:6 Chromium VI to Chromium III. PAMP Action Level for Chromium VI = 0.006, for Chromium III = 5. Cancer PRG for Chromium VI = 2.3 E -5. PAMP Action Level and PRGs shown in table = 7 x Chromium VI value.

Table 2
Hunters Point Shipyard, Parcel E
Project Timeline
2000/2001

Date	Activity
08/16/00	Grass fire at Parcel E.
08/31/00	A single air sample (pesticides, PCBs, SVOCs, VOCs, metals, low resolution dioxins/furans) was taken downwind of the fire area.
09/08/00	At the request of the Department of the Navy, air monitoring equipment was moved from Parcel B to Parcel E. Daily Pesticide, PCB, SVOC, and Low Resolution Dioxin/Furan sampling began at Stations A-F.
09/09/00	Daily Metals and VOC sampling began at Stations A-F.
09/13/00	Clearing and grubbing begins at fire area.
09/16/00	Began cap construction. Began testing for High Resolution Dioxins/Furans - samples taken every 8 days.
09/17/00	TSP samples tested for radioactive properties (gross alpha, beta, and gamma). Metals analysis were not conducted. Station G (duplicate of Station D) is added to sampling network. Station G samples collected approximately every other sampling day.
09/19/00	Began daily testing for Chlorine and Phosgene.
09/24/00	Increased use of water for dust control.
09/28/00	Began receiving cap liner material.
09/29/00	Increased use of water for dust control. Discontinued use of transfer trailers.
10/03/00	To control dust, rock was placed on roads and near air stations. Soil was placed and compacted at liner lay down area.
10/07/00	Chlorine and Phosgene testing scaled back to approximately every other day.
10/15/00	PUF samplers moved back to Parcel B. New PUF samplers installed at Parcel E. New samplers do not have Dixon chart recorders, therefore, hourly Magnehelic® readings recorded.
10/18/00	Ceased sampling for Pesticides, SVOCs and Low Resolution Dioxin/Furan.
10/19/00	Sampling for High Resolution Dioxin/Furan stopped.

Table 2
Hunters Point Shipyard, Parcel E
Project Timeline
2000/2001

Date	Activity
10/20/00	Ceased sampling for Chlorine and Phosgene.
10/21/00	Metals and VOC sampling scaled back to approximately every third day.
10/23/00	Grading and smooth rolling activities completed on western portion of site.
10/24/00	Began placing geosynthetics.
11/21/00	Geosynthetic placement activities completed.
11/22/00 - 11/27/00	Sampler maintenance - no sampling conducted. Field activities suspended.
11/30/00	Began placement of vegetative cover. Began transporting landfill fire debris offsite.
12/06/00	Transport of landfill fire debris offsite completed.
12/15/00 - 1/04/01	No sampling due to inclement weather and reduced Parcel E field work.
01/05/01	Sampled for PCBs, VOCs, and Metals.
1/06/01 - 1/29/01	No sampling due to inclement weather and reduced Parcel E field work.
01/29/01	Restarted PCB, VOC, and metal sampling approximately every three days.
03/13/01	Department of Navy suspended air sampling and monitoring activities.
03/27/01	Vegetative cover placement activities completed.
03/29/01	Began hydroseeding.

Table 3
Hunters Point Shipyard, Parcel E
Initial Sampling Results - 8/31/00

Compound	8/31/00 to 9/01/00 Results (µg/m ³)	DO109 PAMP Action Level (µg/m ³)	% of PAMP Action Level	Ambient Air Cancer PRG (µg/m ³)	% of Ambient Air Cancer PRG	Ambient Air Chronic PRG (µg/m ³)	% of Ambient Air Chronic PRG
Phenol	0.0493	-	-	-	-	2200	0.002%
2-Methylphenol	0.0262	-	-	-	-	180	0.015%
4-Methylphenol	0.0465	-	-	-	-	18	0.26%
Dibenzofuran	0.00775	-	-	-	-	15	0.052%
Diethylphthalate	0.022	-	-	-	-	2,900	0.0008%
Fluorene	0.00526	-	-	-	-	150	0.0035%
Phenanthrene	0.0889	1.5	5.93%	-	-	-	-
Anthracene	0.0113	-	-	-	-	1,100	0.00103%
Di-N-Butylphthalate	0.045	-	-	-	-	370	0.012%
Fluoranthene	0.0232	-	-	-	-	150	0.0155%
Pyrene	0.00979	-	-	-	-	110	0.01%
Bis(2-ethylhexyl)phthalate	0.00631	0.018	35%	0.48	1%	80	0.01%
Dichlorodifluoromethane	2.1	-	-	-	-	210	1.0%
Copper	0.052	10	1%	-	-	-	-
Styrene	0.767	-	-	-	-	1,100	0.07%
Benzene	4.63	0.32	1447%	0.25	1852%	6.2	75%
Toluene	1.92	-	-	-	-	400	0.48%
Xylene, Total ^(a)	0.825	4,350	0.019%	-	-	730	0.11%
Heptadecane, 9-octyl- ^(c)	0.200	-	-	-	-	-	-
Naphthalene, decahydro-4a-methyl- ^(c)	0.169	-	-	-	-	-	-
Vanillin ^(c)	0.0955	-	-	-	-	-	-
Phenol,2,6-dimethoxy- ^(c)	0.0811	-	-	-	-	-	-
Lup-20(20)-en-3-one ^(c)	0.0577	-	-	-	-	-	-

(a) Xylene (M+P) = 1.0; Xylene (O) = ND

(b) PAMP Action Level and Cancer PRG are based on assumed total chromium ratio of 1:6 Chromium VI to Chromium III. PAMP Action Level for Chromium VI = 0.006, for Chromium III = 5. Cancer PRG for Chromium VI = 2.3 E-5. PAMP Action Level and PRGs shown in table = 7 x Chromium VI value.

(c) Tentatively Identified Compound

Table 4
Hunters Point Shipyard, Parcel E
Project Average* Air Concentrations of Detected Compounds
(µg/m³)

Compound	PAMP Action Level	Cancer PRG Action Level	Chronic PRG Action Level	Station A	Station B	Station C	Station D	Station E	Station F	Station G
Metals (particulate)										
Aluminum	150	5.1	NA	1.317	ND	1.457	1.622	1.287	1.437	1.421
Arsenic	0.014	0.00045	NA	0.00110	0.00105	0.00120	0.00142	0.00107	0.00114	0.00118
Barium	NA	NA	0.52	ND	ND	ND	0.0637	0.0629	0.0684	ND
Beryllium	0.03	0.0008	0.021	ND	ND	0.00627	ND	ND	ND	ND
Chromium (Total) **	0.042	0.00016	NA	ND	ND	0.0260	0.0260	0.0278	0.0330	0.0344
Cobalt	NA	NA	NA	ND	ND	ND	0.00636	ND	ND	ND
Copper	10	NA	NA	0.0893	0.1474	0.1521	0.0800	0.0586	0.1202	0.0535
Lead***	1.5	NA	NA	0.0144	0.0156	0.0266	0.0498	0.0262	0.0251	0.0240
Manganese	0.05	NA	0.051	0.0263	0.0288	0.0412	0.0884	0.0425	0.0506	0.0520
Molybdenum	NA	NA	NA	ND	ND	ND	ND	0.0124	0.0139	0.0127
Nickel	10	NA	NA	0.0655	0.0633	0.0638	0.0638	0.0653	0.0683	0.0613
Zinc	1050	NA	NA	0.123	ND	ND	0.127	ND	0.130	ND
VOCs										
1,2,4-Trimethylbenzene	NA	NA	6.2	2.90	1.46	2.74	1.45	1.52	1.61	1.36
1,3,5-Trimethylbenzene	NA	NA	6.2	1.58	ND	1.57	ND	1.33	ND	ND
Benzene	0.32	0.25	6.2	1.21	1.08	1.13	1.07	1.02	1.15	0.94
Carbon Tetrachloride	NA	0.13	2.6	0.403	0.434	0.454	0.404	0.396	0.466	0.429
Chlorobenzene	NA	NA	62	ND	ND	0.284	ND	ND	ND	ND
Chloroethane	NA	2.3	10000	0.318	ND	0.322	0.292	0.274	ND	ND
Chloroform	NA	0.084	0.31	ND	ND	0.601	0.551	ND	ND	ND
Chloromethane	NA	1.1	1900000000	0.539	0.517	0.399	0.410	0.472	0.437	0.568
Cis-1,2-Dichloroethene	NA	37	NA	ND	ND	NA	0.247	ND	ND	0.452
Dichlorodifluoromethane	NA	NA	210	2.57	2.65	2.58	2.66	2.63	2.74	2.48
Ethylbenzene	NA	NA	1100	0.677	0.567	0.562	0.751	0.526	0.606	0.450
Methylene Chloride	NA	4.1	3100	1.112	1.043	1.050	0.948	0.935	1.299	ND
Styrene	NA	NA	1100	0.371	0.243	0.267	0.251	0.234	0.318	0.232
Tetrachloroethene	35	3.3	420	0.461	0.476	0.493	0.454	0.450	0.489	0.462
Toluene	NA	NA	400	4.88	4.28	3.99	4.08	3.86	4.47	3.80
Trichloroethene	NA	1.1	NA	ND	0.321	ND	ND	ND	0.350	0.522
Trichlorofluoromethane	NA	NA	730	1.14	1.42	1.19	1.34	1.32	1.24	1.05
Xylenes (Total)	4350	NA	730	4.17	3.14	3.50	3.60	2.95	3.35	2.58
Pesticides/PCBs										
Endrin	NA	NA	1.1	ND	ND	ND	ND	ND	0.015130	ND
Aroclor 1260	0.01	0.0034	NA	0.00153	ND	ND	ND	0.00160	0.00429	ND
SVOCs										
2-Methylnaphthalene	NA	NA	NA	0.00157	ND	ND	ND	ND	ND	ND
Acenaphthylene	NA	NA	NA	0.00192	0.00156	0.00162	0.00285	ND	0.00157	0.00389
Anthracene	NA	NA	1100	0.00163	ND	ND	0.00289	0.00204	0.00189	0.00321
Bis(2-ethylhexyl)phthalate	0.018	0.48	80	0.02490	0.03765	0.00743	0.02830	0.02968	0.01521	0.01036
Butyl Benzyl Phthalate	NA	NA	730	0.00242	0.00225	0.00928	0.00900	0.00259	0.00189	0.00193
Dibenzofuran	NA	NA	15	0.00153	ND	0.00156	0.00390	0.00174	0.00182	0.00442
Diethylphthalate	NA	NA	2900	0.0233	0.0231	0.0060	0.0166	0.0272	0.0175	0.1420
Di-n-butylphthalate	NA	NA	370	0.0081	0.0155	0.0331	0.0171	0.0196	0.0241	0.0065
Di-n-octyl phthalate	NA	NA	73	0.00175	ND	ND	ND	ND	ND	ND
Fluoranthene	NA	NA	150	0.00199	0.00169	0.00186	0.00562	0.00228	0.00206	0.00611
Fluorene	NA	NA	150	0.00159	0.00168	0.00198	0.00612	0.00229	0.00232	0.00807
Naphthalene	NA	NA	3.1	0.00154	0.00151	0.00155	ND	ND	ND	ND
Phenanthrene	NA	NA	NA	0.00716	0.00642	0.01009	0.03252	0.01421	0.01165	0.03543
Pyrene	NA	NA	110	0.00207	0.00158	0.00173	0.00317	0.00186	0.00233	0.00342
High Resolution Dioxin/Furans										
2,3,7,8-Tetrachlorodibenzo-p-dioxin, Equivalency (TCDD)	NA	0.000000045	NA	0.0000000095	0.0000000069	0.0000000094	0.0000000130	0.0000000102	0.0000000047	0.0000000035
Chlorine Compounds										
Particulate Chloride	NA	NA	NA	6.20	4.69	6.22	5.68	5.72	5.78	NS

* Averages are calculated assuming 1/2 the Laboratory Reporting Limit for Not Detected Results.

** PAMP Action Level and Cancer PRG are based on assumed total chromium ratio of 1:6 Chromium VI to Chromium III. PAMP Action Level for Chromium VI = 0.006, for Chromium III = 5. Cancer PRG for Chromium VI = 2.3 E⁻⁵. PAMP Action Level and PRGs shown in table = 7 x Chromium VI value.

Table 5
Hunters Point Shipyard, Parcel E
Non-Detected Target Compounds

Contaminant		
<i>Metals (particulate)</i>	<i>VOCs</i>	<i>SVOCs</i>
Antimony	1,1,1-Trichloroethane	2,4,5-Trichlorophenol
Cadmium	1,1,2-Trichloroethane	2,4,6-Trichlorophenol
Mercury	1,1-Dichloroethane	2,4-Dichlorophenol
Selenium	1,1-Dichloroethene	2,4-Dimethylphenol
Silver	1,1,2,2-Tetrachloroethane	2,4-Dinitrophenol
Thallium	1,2-Dibromoethane	2,4-Dinitrotoluene
Vanadium	1,2-Dichlorobenzene	2,4-Dinitrotoluene
	1,2-Dichloroethane	2-Chloronaphthalene
<i>High Resolution Dioxin/Furans</i>	1,2-Dichloropropane	2-Chlorophenol
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1,2,4-Trichlorobenzene	2-Methylphenol
2,3,7,8-Tetrachlorodibenzofuran	1,3-Dichlorobenzene	2-Nitroaniline
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	1,4-Dichlorobenzene	2-Nitrophenol
Heptachlorodibenzofuran (Total)	Bromomethane	3,3'-Dichlorobenzidine
Heptachlorodibenzo-p-dioxins (Total)	Cis-1,3-Dichloropropene	3-Nitroaniline
Hexachlorodibenzofuran (Total)	Dichlorotetrafluoroethane	4,6-Dinitro-2-Methylphenol
Hexachlorodibenzo-p-dioxins (Total)	Hexachlorobutadiene	4-Bromophenol Phenyl Ether
Octachlorodibenzofuran	Trans-1,3-Dichloropropene	4-Chloro-3-Methylphenol
Octachlorodibenzo-p-dioxin	Trichlorotrifluoroethane	4-Chloroaniline
Pentachlorodibenzofuran (Total)	Vinyl Chloride	4-Chlorophenyl Phenyl Ether
		4-Methylphenol
<i>CHLORINE COMPOUNDS</i>	<i>Pesticides/PCBs</i>	4-Nitroaniline
Hydrogen Chloride Gas	Aldrin	4-Nitrophenol
Chlorine Gas	4,4'-DDD	Acenaphthylene
	4,4'-DDE	Benzo(a)anthracene
<i>OTHER</i>	4,4'-DDT	Benzo(a)pyrene
Phosgene	A-BHC	Benzo(b)fluoranthene
	B-BHC	Benzo(k)fluoranthene
	Chlordane	Benzo(g,h,i)perylene
	D-BHC	Benzyl Alcohol
	Dieldrin	Bis(2-Chlorethyl)ether
	Endosulfan I	Bis(2-Chlorethoxy)methane
	Endosulfan II	Bis(2-Chlorisopropyl)ether
	Endosulfan Sulfate	Chrysene
	Endrin Aldehyde	Dibenzo(a,h)anthracene
	Heptachlor	Dimethyl Phthalate
	Heptachlor Epoxide	Hexachlorobenzene
	Lindane	Hexachlorobutadiene
	Methoxychlor	Hexachlorocyclopentadiene
	Toxaphene	Hexachloroethane
	PCBs (Aroclor 1016)	Indeno(1,2,3-cd)pyrene
	PCBs (Aroclor 1221)	Isophorone
	PCBs (Aroclor 1232)	Nitrobenzene
	PCBs (Aroclor 1242)	N-Nirtoso-di-n-propylamine
	PCBs (Aroclor 1248)	N-Nitrosodipropylamine
	PCBs (Aroclor 1254)	Pentachlorophenol

Table 6
Concentrations Above PAMP/PRG - Daily Basis ^(a)

Date	Compound Name	Air Concentration (µg/m3) ^(a)									
		PAMP Action Level	Cancer PRG	Chronic PRG	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
8/31 to 9/1	Benzene	0.32	0.25	6.2				4.63			
9/1 to 9/8	No Samples taken										
9/8 to 9/9	Bis(2-ethylhexyl)phthalate	0.018	0.48	80		0.744		0.365 ^(b)	0.133 ^(b,e)	0.0621 ^(b,e)	
9/9 to 9/10	Benzene	0.32	0.25	6.2	0.479	0.543	0.511	0.926	0.799	0.351	
	Bis(2-ethylhexyl)phthalate	0.018	0.48	80					0.0797 ^(b)		
	Carbon Tetrachloride	5	0.13	2.6		0.629 ^(c)				0.629 ^(c)	
	Manganese	0.05	NA	0.051				0.0612			
9/10 to 9/11	Benzene	0.32	0.25	6.2	0.479	0.447	0.575	0.607	0.639	0.735	
	Bis(2-ethylhexyl)phthalate	0.018	0.48	80					0.647	0.0279 ^(b)	
	Carbon Tetrachloride	5	0.13	2.6					0.629 ^(c)		
	Manganese	0.05	NA	0.051				0.0744		0.0561	
9/11 to 9/12	Benzene	0.32	0.25	6.2	1.09	1.15	1.15	1.09	0.99	0.958	
	Carbon Tetrachloride	5	0.13	2.6						0.629 ^(c)	
	Manganese	0.05	NA	0.051		0.0586 ^(e)		0.0669		0.0729	
9/12 to 9/13	Benzene	0.32	0.25	6.2	3.45	2.88	3.45	2.84	2.78	2.04	
	Manganese	0.05	NA	0.051	0.0699		0.0619	0.0921	0.0788	0.173	
9/13 to 9/14	Benzene	0.32	0.25	6.2	0.799			0.511	0.671	0.671	
	Manganese	0.05	NA	0.051		0.0525		0.108		0.0848	
9/14 to 9/15	Benzene	0.32	0.25	6.2		0.415				1.50	
	Carbon Tetrachloride	5	0.13	2.6					0.629 ^(c)		
	Manganese	0.05	NA	0.051				0.104			
9/15 to 9/16	1,2,4-Trimethylbenzene	NA	NA	6.2	77.2 ^(c)						
	1,3,5-Trimethylbenzene	NA	NA	6.2	13.7 ^(c)						
	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.0121	
	Benzene	0.32	0.25	6.2	0.383			0.319			
	Manganese	0.05	NA	0.051		0.0521 ^(e)		0.227	0.0901		
9/16 to 9/17	Benzene	0.32	0.25	6.2	2.72	2.20	1.50	2.08	2.33	1.88	
	Bis(2-ethylhexyl)phthalate	0.018	0.48	80	0.683					0.328 ^(b)	
	Carbon Tetrachloride	5	0.13	2.6		0.629 ^(c)				0.692 ^(c)	
	Manganese	0.05	NA	0.051	0.0606	0.116 ^(e)		0.122	0.107	0.0589	
9/17 to 9/18	Benzene	0.32	0.25	6.2	2.97	2.43	2.65	2.20	2.43	2.88	
	Bis(2-ethylhexyl)phthalate	0.018	0.48	80							0.187 ^(b)
	Chloroform	NA	0.084	0.31				1.22 ^(c)			
9/18 to 9/19	Aluminum	150	NA	5.1				6.626 ^(c)		7.094 ^(c)	
	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.0381	
	Arsenic	0.014	0.00045	NA				0.0038 ^(c)		0.0220	
	Benzene	0.32	0.25	6.2	1.50	1.28	1.92	1.15	1.53	1.12	
	Carbon Tetrachloride	5	0.13	2.6			1.636 ^(c)				
	Chloroform	NA	0.084	0.31			1.17 ^(c)				
	Manganese	0.05	NA	0.051	0.0752	0.0775 ^(e)	0.0868	0.294	0.156	0.195	
9/19 to 9/20	1,2,4-Trimethylbenzene	NA	NA	6.2			41 ^(c)				
	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.0152	
	Arsenic	0.014	0.00045	NA				0.002 ^(c)			
	Benzene	0.32	0.25	6.2	1.3	1.4	1.7	1.2	1.2	1.1	
	Bis(2-ethylhexyl)phthalate	0.018	0.48	80		0.445 ^(b)					
9/20 to 9/21	Manganese	0.05	NA	0.051				0.192	0.117	0.136	
	Arsenic	0.014	0.00045	NA				0.003 ^(c)			
	Manganese	0.05	NA	0.051	0.0575			0.134			
9/21 to 9/22	Benzene	0.32	0.25	6.2				0.4			
	Carbon Tetrachloride	5	0.13	2.6	0.63 ^(c)						
	Manganese	0.05	NA	0.051	0.0738			0.1282			
9/22 to 9/23	Benzene	0.32	0.25	6.2	1.2	1.0		1.0	0.9	0.7	
	Bis(2-ethylhexyl)phthalate	0.018	0.48	80					0.0196 ^(b,e)		
	Manganese	0.05	NA	0.051			0.081	0.078			
9/23 to 9/24	No Samples taken										
9/24 to 9/25	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.00861 ^(c)	
	Benzene	0.32	0.25	6.2	1.0	0.9	1.0	0.7	0.7	1.3	0.7
	Manganese	0.05	NA	0.051		0.0612	0.0540	0.122	0.0740		
9/25 to 9/26	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.0127	
	Arsenic	0.014	0.00045	NA	0.004 ^(c)			0.003 ^(c)			
	Beryllium	0.03	0.0008	0.021			0.013 ^(c)				
	Benzene	0.32	0.25	6.2	0.42	0.51	0.64	0.51		0.83	
	Carbon Tetrachloride	5	0.13	2.6						1.32 ^(c)	
9/26 to 9/27	Manganese	0.05	NA	0.051			0.0725	0.259	0.0559	0.0819	
	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.00448 ^(c)	
	Arsenic	0.014	0.00045	NA			0.002 ^(c)	0.004 ^(c)			
	Benzene	0.32	0.25	6.2		0.42					
	Manganese	0.05	NA	0.051			0.0716	0.226	0.0613	0.069	
9/27 to 9/28	Aroclor 1260 (PCB)	0.01	0.0034	NA					0.00382 ^(c,e)	0.00520 ^(c)	
	Arsenic	0.014	0.00045	NA		0.002 ^(c)					
	Manganese	0.05	NA	0.051				0.162			

Table 6
Concentrations Above PAMP/PRG - Daily Basis ^(a)

Date	Compound Name	Air Concentration (µg/m3) ^(a)									
		PAMP Action Level	Cancer PRG	Chronic PRG	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
9/28 to 9/29	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.0338	
	Arsenic	0.014	0.00045	NA				0.004 ^(c)		0.003 ^(c)	0.004 ^(c)
	Benzene	0.32	0.25	6.2	0.89	0.67	0.58	0.61	0.61	0.67	0.61
	Manganese	0.05	NA	0.051				0.166	0.0637	0.119	0.197
	Trichloroethene	NA	1.1	22						1.4 ^(c)	
9/29 to 9/30	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.0432	
	Arsenic	0.014	0.00045	NA	0.002 ^(c)						
	Benzene	0.32	0.25	6.2		1.5	1.4	1.3	1.5	1.1	
	Manganese	0.05	NA	0.051				0.185		0.173	
9/30 to 10/1	No Samples taken										
10/1 to 10/2	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.0247 ^(e)	
	Arsenic	0.014	0.00045	NA			0.002 ^(c)				
	Benzene	0.32	0.25	6.2	0.45		0.42	0.32	0.73		
	Bis(2-ethylhexyl)phthalate	0.018	0.48	80			0.0471 ^(b)				
	Manganese	0.05	NA	0.051	0.107		0.085	0.127		0.146	0.084
10/2 to 10/3	Aroclor 1260 (PCB)	0.01	0.0034	NA					0.00408 ^(c,e)	0.00645 ^(c,e)	
	Arsenic	0.014	0.00045	NA	0.002 ^(c)		0.002 ^(c)	0.002 ^(c)			
	Manganese	0.05	NA	0.051	0.063		0.104	0.117	0.079	0.070	
10/3 to 10/4	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.0208 ^(e)	
	Arsenic	0.014	0.00045	NA			0.003 ^(c)	0.002 ^(c)			
	Manganese	0.05	NA	0.051			0.093	0.119		0.052	0.083
	Benzene	0.32	0.25	6.2		0.45	0.32		0.35		
	Trichloroethene	NA	1.1	22							0.63 ^(c)
10/4 to 10/5	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.0156	
	Arsenic	0.014	0.00045	NA			0.002 ^(c)	0.002 ^(c)			
	Benzene	0.32	0.25	6.2	0.32	0.35					
	Carbon Tetrachloride	5	0.13	2.6	0.82 ^(c)				0.63 ^(c)		
	Manganese	0.05	NA	0.051			0.052	0.237	0.050 ^(b)	0.079	
10/5 to 10/6	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.0138	
	Benzene	0.32	0.25	6.2							0.42
	Carbon Tetrachloride	5	0.13	2.6						0.63 ^(c)	0.76 ^(c)
	Manganese	0.05	NA	0.051				0.100		0.069	0.092
10/6 to 10/7	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.00566 ^(c)	
	Benzene	0.32	0.25	6.2				0.32			
	Manganese	0.05	NA	0.051				0.063			
10/7 to 10/8	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.00482 ^(c)	
	Benzene	0.32	0.25	6.2					0.32		
10/8 to 10/9	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.00434 ^(c)	
	Carbon Tetrachloride	5	0.13	2.6	0.69 ^(c)						
	Manganese	0.05	NA	0.051				0.053			
10/9 to 10/10	Benzene	0.32	0.25	6.2				0.32			
10/10 to 10/11	Benzene	0.32	0.25	6.2	1.25			1.05			
	Manganese	0.05	NA	0.051				0.137			
	Benzene	0.32	0.25	6.2	1.21	1.12		0.89	0.80		1.2
10/11 to 10/12	Carbon Tetrachloride	5	0.13	2.6		0.63 ^(c)			0.63 ^(c)		
	Manganese	0.05	NA	0.051				0.074			0.052
	Benzene	0.32	0.25	6.2	1.8 ^(e)	1.1 ^(e)	1.2 ^(e)	1.5 ^(e)	1.3 ^(e)	1.4 ^(e)	
	Bis(2-ethylhexyl)phthalate	0.018	0.48	80				0.187 ^(b,e)		0.0283 ^(b,e)	
	Carbon Tetrachloride	5	0.13	2.6		0.76 ^(c,e)					
10/12 to 10/13	Manganese	0.05	NA	0.051				0.061			
	Aluminum	150	NA	5.1			5.711 ^(c)				
	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.00381 ^(c,e)	
	Arsenic	0.014	0.00045	NA			0.002 ^(c)				
	Benzene	0.32	0.25	6.2	1.6	1.2	1.3	1.1	1.3	1.0	1.2
10/13 to 10/14	Carbon Tetrachloride	5	0.13	2.6	0.69 ^(c)		0.76 ^(c)				
	Manganese	0.05	NA	0.051			0.103	0.077			
	Benzene	0.32	0.25	6.2	0.38		0.38	0.38			1.2
10/14 to 10/15	Bis(2-ethylhexyl)phthalate	0.018	0.48	80			0.0251 ^(b,e)	0.301 ^(b,e)			
	Manganese	0.05	NA	0.051	0.070		0.075	0.086			
	Arsenic	0.014	0.00045	NA					0.002 ^(c)		
10/15 to 10/16	Benzene	0.32	0.25	6.2	3.1	2.1	1.8	2.2	1.9	2.4	1.7
	Manganese	0.05	NA	0.051				0.070			
	Benzene	0.32	0.25	6.2	3.6	2.9	2.7	2.7	2.8	2.9	
10/16 to 10/17	Manganese	0.05	NA	0.051				0.054	0.051	0.057	
	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.00403 ^(c)	
	Benzene	0.32	0.25	6.2	0.80	0.80	0.86	0.96	0.70	0.58	1.1
	Bis(2-ethylhexyl)phthalate	0.018	0.48	80	0.0306 ^(b)						0.0996 ^(b,e)
	Chloromethane	NA	1.1	1900000000							6.3 ^(c)
10/17 to 10/18	Manganese	0.05	NA	0.051			0.053 ^(e)	0.065			0.072
	Benzene	0.32	0.25	6.2	0.61	0.61	0.32	0.45	0.54	0.48	
	TCDD Equivalency	NA	0.000000045	NA				0.000000459 ^(c,e)	0.54	0.48	

Table 6
Concentrations Above PAMP/PRG - Daily Basis ^(a)

Date	Compound Name	Air Concentration (µg/m3) ^(a)									
		PAMP Action Level	Cancer PRG	Chronic PRG	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
10/19 to 10/20	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.00368 ^(c)	
	Benzene	0.32	0.25	6.2	0.61	0.89	0.80	0.77	0.54	0.64	
	Manganese	0.05	NA	0.051			0.059	0.051		0.053	
10/20 to 10/21	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.00452 ^(c)	
	Benzene	0.32	0.25	6.2	0.67	0.73	0.83	0.61	0.61	0.67	1.0
	Manganese	0.05	NA	0.051		0.063	0.114	0.052			
10/21 to 10/22	No Exceedances										
10/22 to 10/23	No Exceedances										
10/23 to 10/24	No Exceedances										
10/24 to 10/25	Benzene	0.32	0.25	6.2	0.32	0.38		0.38	0.45	0.45	
	Manganese	0.05	NA	0.051	0.055	0.080	0.216	0.074			
10/25 to 10/26	No Exceedances										
10/26 to 10/27	No Exceedances										
10/27 to 10/28	Benzene	0.32	0.25	6.2					0.32	0.54	
10/28 to 10/29	No Exceedances										
10/29 to 10/30	No Exceedances										
10/30 to 10/31	No Exceedances										
10/31 to 11/1	No Exceedances										
11/1 to 11/2	Arsenic	0.014	0.00	NA		0.002 ^(c)					
	Benzene	0.32	0.25	6.2	2.2	0.7 ^(e)	1.8	1.8	1.9	1.7	1.8
11/2 to 11/3	No Exceedances										
11/3 to 11/4	No Exceedances										
11/4 to 11/5	Benzene	0.32	0.25	6.2	0.48	0.64	0.54	0.61	0.35	0.64	
11/5 to 11/6	No Exceedances										
11/6 to 11/7	No Exceedances										
11/7 to 11/8	1,2,4-Trimethylbenzene	NA	NA	6.2			27 ^(c)				
	1,3,5-Trimethylbenzene	NA	NA	6.2			7.2 ^(c)				
	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.004 ^(c)	
	Benzene	0.32	0.25	6.2	1.6	2.0	3.1	0.38	1.3	1.8	1.3
	Carbon Tetrachloride	5	0.13	2.6		0.69 ^(c)			0.82 ^(c)	0.69 ^(c)	0.63 ^(c)
	Manganese	0.05	NA	0.051				0.066			0.062
11/8 to 11/9	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.006 ^(c)	
11/9 to 11/10	No Exceedances										
11/10 to 11/11	Benzene	0.32	0.25	6.2	1.7	1.6	1.6	1.8	1.7	1.6	
	Carbon Tetrachloride	5	0.13	2.6	0.76 ^(c)	0.76 ^(c)	0.76 ^(c)		0.82 ^(c)		
	Chloromethane	NA	1.1	1.90E+09		2.2 ^(c)		3.1 ^(c)	7.4 ^(c)		
	Manganese	0.05	NA	0.051				0.058			
11/11 to 11/12	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.004 ^(c)	
11/12 to 11/13	No Exceedances										
11/13 to 11/14	Benzene	0.32	0.25	6.2	1.5	1.4	1.4	1.4	1.5	1.6	0.48
	Carbon Tetrachloride	5	0.13	2.6		0.69 ^(c)	0.76 ^(c)	0.69 ^(c)	0.88 ^(c)	0.69 ^(c)	
	Chloromethane	NA	1.1	1900000000					1.1 ^(c)		
11/14 to 11/15	No Exceedances										
11/15 to 11/16	No Exceedances										
11/16 to 11/17	Arsenic	0.014	0.00045	NA			0.002 ^(c)				
	Benzene	0.32	0.25	6.2	2.0	1.7	1.8	1.8	2.3	2.1	
	Carbon Tetrachloride	5	0.13	2.6		0.88 ^(c)	0.82 ^(c)	0.82 ^(c)	0.69 ^(c)	0.69 ^(c)	
	Chloromethane	NA	1.1	1900000000					1.1 ^(c)		
11/17 to 11/18	No Exceedances										
11/18 to 11/19	No Exceedances										
11/19 to 11/20	Arsenic	0.014	0.00045	NA				0.003 ^(c)		0.002 ^(c)	
	Benzene	0.32	0.25	6.2	2.7	2.2	2.0	2.4	1.7	2.9	2.5
	Carbon Tetrachloride	5	0.13	2.6	0.82 ^(c)			0.63 ^(c)			0.82 ^(c)
	Chloromethane	NA	1.1	1900000000	1.1 ^(c)						
	Manganese	0.05	NA	0.051				0.093	0.065	0.153	0.077
11/20 to 11/21	No Exceedances										
11/21 to 11/22	No Exceedances										
11/22 to 11/27	No Samples taken										
11/27 to 11/28	No Exceedances										
11/28 to 11/29	No Exceedances										
11/29 to 11/30	No Exceedances										
11/30 to 12/1	Arsenic	0.014	0.00045	NA			0.002 ^(c)		0.002 ^(c)		
	Benzene	0.32	0.25	6.2	3.0	2.7	2.7	2.5	2.4	2.8	
	Carbon Tetrachloride	5	0.13	2.6	0.76 ^(c)		0.69 ^(c)	0.76 ^(c)	0.63 ^(c)		
	Chloromethane	NA	1.1	1900000000	1.1 ^(c)						
12/1 to 12/2	No Exceedances										
12/2 to 12/3	No Exceedances										
12/3 to 12/4	Arsenic	0.014	0.00045	NA						0.002 ^(c)	0.002 ^(c)
	Benzene	0.32	0.25	6.2	2.1	1.9	1.8	1.8	2.0	2.0	1.9
	Carbon Tetrachloride	5	0.13	2.6		0.88 ^(c)		0.63 ^(c)			0.76 ^(c)
	Manganese	0.05	NA	0.051					0.086		
12/4 to 12/5	No Exceedances										

Table 6
Concentrations Above PAMP/PRG - Daily Basis ^(a)

Date	Compound Name	Air Concentration (µg/m3) ^(a)									
		PAMP Action Level	Cancer PRG	Chronic PRG	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
12/5 to 12/6	No Exceedances										
12/6 to 12/7	No Exceedances										
12/7 to 12/8	Arsenic	0.014	0.00045	NA			0.003 ^(c)	0.002 ^(c)			
	Benzene	0.32	0.25	6.2	2.5	2.5	2.4	2.3	2.1	2.2	
	Carbon Tetrachloride	5	0.13	2.6	0.63 ^(c)	0.69 ^(c)	0.69 ^(c)	0.69 ^(c)			
	Chloromethane	NA	1.1	1900000000		1.1 ^(c)					
	Manganese	0.05	NA	0.051				0.115			
12/8 to 12/9	No Exceedances										
12/9 to 12/10	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.004 ^(c,e)	
12/10 to 12/11	No Exceedances										
12/11 to 12/12	Arsenic	0.014	0.00045	NA						0.003 ^(c)	
	Benzene	0.32	0.25	6.2		0.8	0.67	0.70	0.70	0.54	0.73
	Carbon Tetrachloride	5	0.13	2.6		0.82 ^(c)					0.82 ^(c)
12/12 to 12/13	No Exceedances										
12/13 to 12/14	No Exceedances										
12/14 to 12/15	Aroclor 1260 (PCB)	0.01	0.0034	NA						0.004 ^(c)	
12/15 to 1/5	No Samples taken										
1/5 to 1/6	Arsenic	0.014	0.00045	NA				0.002 ^(c)		0.002 ^(c)	
	Benzene	0.32	0.25	6.2	3.35	3.51	3.39	3.48	3.39	3.90	
	Carbon Tetrachloride	5	0.13	2.6		1.0 ^(c)	0.63 ^(c)	0.94 ^(c)	0.69 ^(c)	0.63 ^(c)	
	Chloromethane	NA	1.1	1900000000				1.7 ^(c)			
	Manganese	0.05	NA	0.051				0.061			
	Methylene Chloride	NA	4.1	3,100		4.24 ^(c)					
	Tetrachloroethene	35	3.3	420	3.5 ^(c)		3.5 ^(c)	3.4 ^(c)		3.7 ^(c)	
1/6 to 1/29	No Samples taken										
1/29 to 1/30	Benzene	0.32	0.25	6.2	1.4	0.4	1.0	1.0	1.0	0.9	1.0
	Carbon Tetrachloride	5	0.13	2.6			0.82 ^(c)	0.88 ^(c)	0.63 ^(c)	0.69 ^(c)	0.63 ^(c)
1/30 to 2/1	No Samples taken										
2/1 to 2/2	Arsenic	0.014	0.00045	NA	0.002 ^(c)			0.002 ^(c)			
	Benzene	0.32	0.25	6.2	2.7	2.6	2.91	2.7	2.7	5.91	
	Chloromethane	NA	1.1	1900000000			1.57 ^(c)				
	Methylene Chloride	NA	4.1	3100						4.48 ^(c)	
2/2 to 2/4	No Samples taken										
2/4 to 2/5	Benzene	0.32	0.25	6.2	3.42	2.7	2.49	2.8	1.21	2.08	2.20
	Carbon Tetrachloride	5	0.13	2.6				0.63 ^(c)			
	Chloromethane	NA	1.1	1900000000	10.9 ^(c)	1.4 ^(c)	1.4 ^(c)	1.1 ^(c)			
2/5 to 2/7	No Samples taken										
2/7 to 2/8	Benzene	0.32	0.25	6.2		0.86	1.05	1.02	0.93	1.2	
	Chloromethane	NA	1.1	1900000000						1.5 ^(c)	
2/8 to 2/13	No Samples taken										
2/13 to 2/14	Benzene	0.32	0.25	6.2		1.3	1.3	1.2	1.6	1.8	1.6
	Carbon Tetrachloride	5	0.13	2.6		0.69 ^(c)					
	Chloromethane	NA	1.1	1900000000		1.7 ^(c)					
	Manganese	0.05	NA	0.051					0.053		
2/14 to 2/16	No Samples taken										
2/16 to 2/17	Arsenic	0.014	0.00045	NA		0.002 ^(c)					
	Benzene	0.32	0.25	6.2	0.6	0.7	0.8	0.6	0.7	0.5	
2/17 to 2/23	No Samples taken										
2/23 to 2/24	Arsenic	0.014	0.00045	NA					0.003 ^(c)		
	Benzene	0.32	0.25	6.2	0.67	0.51	0.48		0.58	0.42	0.58
	Carbon Tetrachloride	5	0.13	2.6					0.76 ^(c)		
	Chloromethane	NA	1.1	1900000000		1.4 ^(c)					
	Chromium ^(d)	0.042	0.000164	NA				0.085			
	Tetrahydrofuran	NA	0.99	310					28.2 ^(c)		
2/24 to 3/5	No Samples taken										
3/5 to 3/6	Benzene	0.32	0.25	6.2	0.96	0.73	0.80	0.83	0.54		
3/6 to 3/8	No Samples taken										
3/8 to 3/9	Aluminum	150	NA	5.1				7.139 ^(c)			
	Benzene	0.32	0.25	6.2	0.64	0.45	0.61	0.61	0.48	0.61	0.64
	Chromium ^(d)	0.042	0.000164	NA						0.503	0.231
	Manganese	0.05	NA	0.051				0.204	0.072		0.154
3/9 to 3/12	No Samples taken										
3/12 to 3/13	Benzene	0.32	0.25	6.2	0.77	1.0	0.67		0.64	0.67	
	Carbon Tetrachloride	5	0.13	2.6					0.69 ^(c)		
	Chloromethane	NA	1.1	1900000000		6.2 ^(c)					
	Chromium ^(d)	0.042	0.000164	NA			0.083		0.188		

* Station G is a duplicate of Station D

(a) Unless otherwise noted, concentration exceeds PAMP and PRG levels

(b) Only exceeds PAMP level

(c) Only exceeds PRG level

(d) PAMP Action Level and Cancer PRG are based on assumed total chromium ratio of 1:6 Chromium VI to Chromium III. PAMP Action Level for Chromium VI = 0.006, for Chromium III = 5. Cancer PRG for Chromium VI = 2.3 E-5. PAMP Action Level and PRG's shown in table = 7 x Chromium VI value.

(e) Data does not meet Quality Assurance Specifications

Table 7
Hunters Point Shipyard, Parcel E
Results Summary

Sample Date 2000/2001	Pesticides	PCBs	Chlorine / HCl Gas	Phosgene	SVOCs Other Than Bis-2- Ethylhexyl Phthalate	Bis-2- Ethylhexyl Phthalate	Low Resolution Dioxins/Furans	High Resolution Dioxins/Furans	VOCs	Metals other than Manganese	Manganese
9/8-9/9	ND	ND	NS	NS	B	A ^(a)	ND	NS	NS	NS	NS
9/9-9/10	B	ND	NS	NS	B	A	ND	NS	A	B ^(a)	A ^(a)
9/10-9/11	ND	ND	NS	NS	B	A	ND	NS	A	B	A
9/11-9/12	ND	ND	NS	NS	B	B	ND	NS	A	B ^(a)	A ^(a)
9/12-9/13	ND	ND	NS	NS	B	B	ND	NS	A	B	A
9/13-9/14	ND	ND	NS	NS	B	B	ND	NS	A	B ^(a)	A ^(a)
9/14-9/15	ND	ND	NS	NS	B	B	ND	NS	A	B ^(a)	A ^(a)
9/15-9/16	ND	A	NS	NS	B ^(a)	B	ND	NS	A	B ^(a)	A ^(a)
9/16-9/17	ND	ND	NS	NS	B	A	ND	B ^(a)	A	B ^(a)	A ^(a)
9/17-9/18	ND	ND	NS	NS	B	A	ND	NS	A	NS*	NS*
9/18-9/19	ND	A	NS	NS	B	B	ND	NS	A	A ^(a)	A ^(a)
9/19-9/20	ND	A	ND	NS	B ^(a)	A ^(a)	ND	NS	A	A ^(a)	A ^(a)
9/20-9/21	ND	ND	ND	ND	B ^(a)	B ^(a)	ND	NS	B	A ^(a)	A ^(a)
9/21-9/22	ND	ND	ND	NS	B ^(a)	B ^(a)	ND	NS	A	B ^(a)	A ^(a)
9/22-9/23	ND	ND	NS	NS	B ^(a)	A ^(a)	ND	NS	A	B ^(a)	A ^(a)
9/23-9/24	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
9/24-9/25	ND	A	NS	ND	B ^(a)	B ^(a)	ND	B ^(a)	A	B	A
9/25-9/26	ND	A	NS	ND	B ^(a)	B ^(a)	ND	NS	A	A	A
9/26-9/27	ND	A	ND	ND	B ^(a)	B ^(a)	ND	NS	A	A	A
9/27-9/28	ND	A ^(a)	ND	ND	B ^(a)	B	ND	NS	B	A	A
9/28-9/29	ND	A	ND	ND	B ^(a)	B ^(a)	ND	NS	A	A	A
9/29-9/30	ND	A	ND	ND	B ^(a)	B ^(a)	ND	NS	A	A	A
9/30-10/01	NS	NS	ND	ND	NS	NS	NS	NS	NS	NS	NS
10/01-10/02	ND	A ^(a)	ND	ND	B ^(a)	A ^(a)	ND	NS	A	A	A
10/02-10/03	ND	A ^(a)	ND	ND	B ^(a)	B ^(a)	ND	B ^(a)	B	A	A
10/03-10/04	ND	A ^(a)	ND	ND	B ^(a)	B ^(a)	ND	NS	A	A	A
10/04-10/05	ND	A	ND	ND	B ^(a)	B ^(a)	ND	NS	A	A	A
10/05-10/06	ND	A	ND	ND	B ^(a)	B	ND	NS	A	B	A
10/06-10/07	ND	A	NS	ND	B ^(a)	B	ND	NS	A	B	A
10/07-10/08	ND	A	NS	NS	B ^(a)	ND	ND	NS	A	B	B
10/08-10/09	ND	A	ND	ND	B ^(a)	ND	ND	NS	A	B	A
10/09-10/10	ND	ND	NS	NS	B ^(a)	B	ND	NS	A	B	B
10/10-10/11	ND	ND	NS	ND	B ^(a)	B ^(a)	ND	B ^(a)	A	B	A
10/11-10/12	ND	ND	ND	NS	B ^(a)	B	ND	NS	A	B	A
10/12-10/13	ND	ND	NS	ND	B ^(a)	A ^(a)	ND	NS	A ^(a)	B	A
10/13-10/14	ND	A ^(a)	ND	NS	B ^(a)	B ^(a)	ND	NS	A	A	A
10/14-10/15	ND	ND	NS	NS	B ^(a)	A ^(a)	ND	NS	A	B	A
10/15-10/16	ND	ND	NS	ND	B ^(a)	B ^(a)	ND	NS	A	A	A
10/16-10/17	ND	ND	ND	NS	B ^(a)	B ^(a)	ND	NS	A	B	A
10/17-10/18	ND	A ^(a)	NS	NS	B ^(a)	A ^(a)	ND	NS	A	B ^(a)	A ^(a)
10/18-10/19	NS	NS	NS	ND	NS	NS	NS	A ^(a)	A	NS	NS
10/19-10/20	NS	A	ND	NS	NS	NS	NS	NS	A	B	A
10/20-10/21	NS	A	NS	NS	NS	NS	NS	NS	A	B	A
10/21-10/22	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/22-10/23	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/23-10/24	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/24-10/25	NS	ND	NS	NS	NS	NS	NS	NS	A	B	A
10/25-10/26	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/26-10/27	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/27-10/28	NS	ND	NS	NS	NS	NS	NS	NS	A	B	ND
10/28-10/29	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/29-10/30	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/30-10/31	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
10/31-11/1	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/1-11/2	NS	ND	NS	NS	NS	NS	NS	NS	A ^(a)	A ^(a)	B
11/2-11/3	NS	B	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/3-11/4	NS	B	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/4-11/5	NS	ND	NS	NS	NS	NS	NS	NS	A	B ^(a)	B ^(a)
11/5-11/6	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/6-11/7	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/7-11/8	NS	A	NS	NS	NS	NS	NS	NS	A	B	A
11/8-11/9	NS	A	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/9-11/10	NS	B	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/10-11/11	NS	B	NS	NS	NS	NS	NS	NS	A	B	A
11/11-11/12	NS	A	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 7
Hunters Point Shipyard, Parcel E
Results Summary

Sample Date 2000/2001	Pesticides	PCBs	Chlorine / HCl Gas	Phosgene	SVOCs Other Than Bis-2- Ethylhexyl Phthalate	Bis-2- Ethylhexyl Phthalate	Low Resolution Dioxins/Furans	High Resolution Dioxins/Furans	VOCs	Metals other than Manganese	Manganese
11/12-11/13	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/13-11/14	NS	ND	NS	NS	NS	NS	NS	NS	A	B	B
11/14-11/15	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/15-11/16	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/16-11/17	NS	ND	NS	NS	NS	NS	NS	NS	A	A	B
11/17-11/18	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/18-11/19	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/19-11/20	NS	ND	NS	NS	NS	NS	NS	NS	A	A	A
11/20-11/21	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/21-11/22	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/22-11/27	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/27-11/28	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/28-11/29	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/29-11/30	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
11/30-12/1	NS	ND	NS	NS	NS	NS	NS	NS	A	A	B
12/1-12/2	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/2-12/3	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/3-12/4	NS	ND	NS	NS	NS	NS	NS	NS	A	A	A
12/4-12/5	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/5-12/6	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/6-12/7	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/7-12/8	NS	ND	NS	NS	NS	NS	NS	NS	A	A	A
12/8-12/9	NS	B	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/9-12/10	NS	A ^(a)	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/10-12/11	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/11-12/12	NS	ND	NS	NS	NS	NS	NS	NS	A	A	B
12/12-12/13	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/13-12/14	NS	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/14-12/15	NS	A	NS	NS	NS	NS	NS	NS	NS	NS	NS
12/15-1/5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/5-1/6	NS	ND	NS	NS	NS	NS	NS	NS	A	A	A
1/6-1/29	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1/29-1/30	NS	ND	NS	NS	NS	NS	NS	NS	A	B	B
1/30-2/1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2/1-2/2	NS	ND	NS	NS	NS	NS	NS	NS	A	A	B
2/2-2/4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2/4-2/5	NS	ND	NS	NS	NS	NS	NS	NS	A	B	B
2/5-2/7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2/7-2/8	NS	ND	NS	NS	NS	NS	NS	NS	A	B	B
2/8-2/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2/13-2/14	NS	ND	NS	NS	NS	NS	NS	NS	A	B	A
2/14-1/16	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2/16-2/17	NS	ND	NS	NS	NS	NS	NS	NS	A	A	B
2/17-2/23	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2/23-2/24	NS	ND	NS	NS	NS	NS	NS	NS	A	A	ND
2/24-3/5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
3/5-3/6	NS	ND	NS	NS	NS	NS	NS	NS	A	B	ND
3/6-3/8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
3/8-3/9	NS	ND	NS	NS	NS	NS	NS	NS	A	A	A
3/9-3/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
3/12-3/13	NS	B	NS	NS	NS	NS	NS	NS	A	A	B

A: Results were above the action level (PAMP or PRG) for at least one compound in the group, for at least one monitoring station.

B: Results were below the action level for each compound at all monitoring stations.

ND: Not detected

NS: Not sampled

NR: Not yet reported

* Particulate filters were analyzed for radioactivity instead of metals.

^(a) Annotates Detected Data that does not meet Quality Assurance Specifications.

Table 8
Hunters Point Shipyard, Parcel E
PAMP Action Level Exceedances

Compound	PAMP Action Level (µg/m ³)	PAMP Averaging Period	Air Concentration* ^(a) (µg/m ³)						
			Station A	Station B	Station C	Station D	Station E	Station F	Station G
Benzene	0.32	Project Duration	1.21	1.08	1.13	1.13	1.02	1.15	0.94
Bis(2-ethylhexyl)phthalate	0.018	Project Duration	0.02490	0.03765	B	0.0283	0.0297	B	B
Compound	PAMP Action Level (µg/m ³)	PAMP Averaging Period	Number of PAMP Exceedances ^(a, b) for compounds with 24-hour PAMP Averaging Periods						
			Station A	Station B	Station C	Station D	Station E	Station F	Station G
Manganese	0.05	24-Hour	9	8	16	43	16	19	9

* Averages are calculated assuming 1/2 the Laboratory Reporting Limit for Not Detected Results.

(a) For compounds with project duration PAMP averaging periods, concentrations represent the project average; for compounds with 24-hour PAMP averaging periods, concentrations represent the maximum 24-hour average.

(b) For Detected Air Concentration Results in detail, see Daily PAMP Exceedances (Table 6)

B: Average Air Concentration Below PAMP Action Level

Table 9
Hunters Point Shipyard, Parcel E
PRG Exceedances

Compound	Cancer PRG Action Level	Chronic PRG Action Level	Project Average Air Concentration* (µg/m3)						
			Station A	Station B	Station C	Station D	Station E	Station F	Station G
Aroclor 1260	0.0034	NA	B	ND	ND	ND	B	0.00429	ND
Arsenic	0.00045	NA	0.00110	0.00105	0.0012	0.00142	0.00107	0.00114	0.00118
Benzene	0.25	6.2	1.21	1.08	1.13	1.07	1.02	1.15	0.94
Beryllium	0.0008	0.021	ND	ND	0.00627	ND	ND	ND	ND
Carbon Tetrachloride	0.13	2.6	0.403	0.434	0.454	0.404	0.396	0.466	0.429
Chloroform	0.084	0.31	ND	ND	0.601	0.551	ND	ND	ND
Chromium (Total) **	0.00016	NA	ND	ND	0.0260	0.0260	0.0278	0.0330	0.0344
Manganese	NA	0.051	B	B	B	0.0884	B	B	0.0520

* Averages are calculated assuming 1/2 the Laboratory Reporting Limit for Not Detected Results.

** PRG is based on assumed total chromium ratio of 1:6 Chromium VI to Chromium III.

B: Average Air Concentration Below PRG Action Level

ND: Compound not detected throughout sampling duration

Table 10
Concentrations Above PAMP Action Level - Daily Basis

Date	Compound	Air Concentration (µg/m ³)							
		PAMP	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
8/31 to 9/1	Benzene	0.32				4.63			
9/1 to 9/8	No Samples taken								
9/8 to 9/9	Bis(2-ethylhexyl)phthalate	0.018		0.744		0.365	0.133 ^(e)	0.0621 ^(e)	
9/9 to 9/10	Benzene	0.32	0.479	0.543	0.511	0.926	0.799	0.351	
	Bis(2-ethylhexyl)phthalate	0.018					0.0797		
	Manganese	0.05				0.0612			
9/10 to 9/11	Benzene	0.32	0.479	0.447	0.575	0.607	0.639	0.735	
	Bis(2-ethylhexyl)phthalate	0.018					0.647	0.0279	
	Manganese	0.05				0.0744		0.0561	
9/11 to 9/12	Benzene	0.32	1.09	1.15	1.15	1.09	0.99	0.958	
	Manganese	0.05		0.0586 ^(e)		0.0669		0.0729	
9/12 to 9/13	Benzene	0.32	3.45	2.88	3.45	2.84	2.78	2.04	
	Manganese	0.05	0.0699		0.0619	0.0921	0.0788	0.173	
9/13 to 9/14	Benzene	0.32	0.799			0.511	0.671	0.671	
	Manganese	0.05		0.0525 ^(e)		0.108		0.0848	
9/14 to 9/15	Benzene	0.32		0.415				1.50	
	Manganese	0.05				0.104			
9/15 to 9/16	Aroclor 1260 (PCB)	0.01						0.0121	
	Benzene	0.32	0.383			0.319			
	Manganese	0.05		0.0521 ^(e)		0.227	0.0901		
9/16 to 9/17	Benzene	0.32	2.72	2.20	1.50	2.08	2.33	1.88	
	Bis(2-ethylhexyl)phthalate	0.018	0.683					0.328	
	Manganese	0.05	0.0606	0.116 ^(e)		0.122	0.107	0.0589	
9/17 to 9/18	Benzene	0.32	2.97	2.43	2.65	2.20	2.43	2.88	
	Bis(2-ethylhexyl)phthalate	0.018							0.187
	Aroclor 1260 (PCB)	0.01						0.0381	
9/18 to 9/19	Benzene	0.32	1.50	1.28	1.92	1.15	1.53	1.12	
	Manganese	0.05	0.0752	0.0775 ^(e)	0.0868	0.294	0.156	0.195	
	Aroclor 1260 (PCB)	0.01						0.0152	
9/19 to 9/20	Benzene	0.32	1.3	1.4	1.7	1.2	1.2	1.1	
	Bis(2-ethylhexyl)phthalate	0.018		0.445					
	Manganese	0.05				0.192	0.117	0.136	
9/20 to 9/21	Manganese	0.05	0.0575			0.134			
9/21 to 9/22	Benzene	0.32				0.4			
	Manganese	0.05	0.0738			0.1282			
9/22 to 9/23	Benzene	0.32	1.2	1.0		1.0	0.9	0.7	
	Bis(2-ethylhexyl)phthalate	0.018					0.0196 ^(e)		
	Manganese	0.05			0.081	0.078			
9/23 to 9/24	No Samples taken								
9/24 to 9/25	Benzene	0.32	1.0	0.9	1.0	0.7	0.7	1.3	0.7
	Manganese	0.05		0.0612	0.0540	0.122	0.0740		
9/25 to 9/26	Aroclor 1260 (PCB)	0.01						0.0127	
	Benzene	0.32	0.42	0.51	0.64	0.51		0.83	
	Manganese	0.05			0.0725	0.259	0.0559	0.0819	
9/26 to 9/27	Benzene	0.32		0.42					
	Manganese	0.05			0.0716	0.226	0.0613	0.069	
9/27 to 9/28	Manganese	0.05				0.162			
9/28 to 9/29	Aroclor 1260 (PCB)	0.01						0.0338	
	Benzene	0.32	0.89	0.67	0.58	0.61	0.61	0.67	0.61
	Manganese	0.05				0.166	0.0637	0.119	0.197
9/29 to 9/30	Aroclor 1260 (PCB)	0.01						0.0432	
	Benzene	0.32		1.5	1.4	1.3	1.5	1.1	
	Manganese	0.05				0.185		0.173	
9/30 to 10/1	No Samples taken								
10/1 to 10/2	Benzene	0.32	0.45		0.42	0.32	0.73		
	Bis(2-ethylhexyl)phthalate	0.018			0.0471				
	Manganese	0.05	0.107		0.085	0.127		0.146	0.084
10/2 to 10/3	Manganese	0.05	0.063		0.104	0.117	0.079	0.070	
10/3 to 10/4	Aroclor 1260 (PCB)	0.01						0.0208 ^(e)	
	Manganese	0.05			0.093	0.119		0.052	0.083
	Benzene	0.32		0.45	0.32		0.35		

Table 10
Concentrations Above PAMP Action Level - Daily Basis

Date	Compound	Air Concentration (µg/m ³)							
		PAMP	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
10/4 to 10/5	Aroclor 1260 (PCB)	0.01						0.0156	
	Benzene	0.32	0.32	0.35					
	Manganese	0.05			0.052	0.237	0.050	0.079	
10/5 to 10/6	Aroclor 1260 (PCB)	0.01						0.0138	
	Benzene	0.32							0.42
	Manganese	0.05				0.100		0.069	0.092
10/6 to 10/7	Benzene	0.32				0.32			
	Manganese	0.05				0.063			
10/7 to 10/8	Benzene	0.32					0.32		
10/8 to 10/9	Manganese	0.05				0.053			
10/9 to 10/10	Benzene	0.32				0.32			
10/10 to 10/11	Benzene	0.32	1.25			1.05			
	Manganese	0.05				0.137			
10/11 to 10/12	Benzene	0.32	1.21	1.12		0.89	0.80		1.2
	Manganese	0.05				0.074			0.052
10/12 to 10/13	Benzene	0.32	1.8 ^(e)	1.1 ^(e)	1.2 ^(e)	1.5 ^(e)	1.3 ^(e)	1.4 ^(e)	
	Bis(2-ethylhexyl)phthalate	0.018				0.187 ^(e)		0.0283 ^(e)	
	Manganese	0.05				0.061			
10/13 to 10/14	Benzene	0.32	1.6	1.2	1.3	1.1	1.3	1.0	1.2
	Manganese	0.05			0.103	0.077			
10/14 to 10/15	Benzene	0.32	0.38		0.38	0.38			1.2
	Bis(2-ethylhexyl)phthalate	0.018			0.0251 ^(e)	0.301 ^(e)			
	Manganese	0.05	0.070		0.075	0.086			
10/15 to 10/16	Benzene	0.32	3.1	2.1	1.8	2.2	1.9	2.4	1.7
	Manganese	0.05				0.070			
10/16 to 10/17	Benzene	0.32	3.6	2.9	2.7	2.7	2.8	2.9	
	Manganese	0.05				0.054	0.051	0.057	
10/17 to 10/18	Benzene	0.32	0.80	0.80	0.86	0.96	0.70	0.58	1.1
	Bis(2-ethylhexyl)phthalate	0.018	0.0306						0.0996 ^(e)
	Manganese	0.05			0.053 ^(e)	0.065			0.072
10/18 to 10/19	Benzene	0.32	0.61	0.61	0.32	0.45	0.54	0.48	
10/19 to 10/20	Benzene	0.32	0.61	0.89	0.80	0.77	0.54	0.64	
	Manganese	0.05			0.059	0.051		0.053	
10/20 to 10/21	Benzene	0.32	0.67	0.73	0.83	0.61	0.61	0.67	1.0
	Manganese	0.05		0.063	0.114	0.052			
10/21 to 10/22	No Exceedances								
10/22 to 10/23	No Exceedances								
10/23 to 10/24	No Exceedances								
10/24 to 10/25	Benzene	0.32	0.32	0.38		0.38	0.45	0.45	
	Manganese	0.05	0.055	0.080	0.216	0.074			
10/25 to 10/26	No Exceedances								
10/26 to 10/27	No Exceedances								
10/27 to 10/28	Benzene	0.32					0.32	0.54	
10/28 to 10/29	No Exceedances								
10/29 to 10/30	No Exceedances								
10/30 to 10/31	No Exceedances								
10/31 to 11/1	No Exceedances								
11/1 to 11/2	Benzene	0.32	2.2	0.7 ^(e)	1.8	1.8	1.9	1.7	1.8
11/2 to 11/3	No Exceedances								
11/3 to 11/4	No Exceedances								
11/4 to 11/5	Benzene	0.32	0.48	0.64	0.54	0.61	0.35	0.64	
11/5 to 11/6	No Exceedances								
11/6 to 11/7	No Exceedances								
11/7 to 11/8	Benzene	0.32	1.6	2.0	3.1	0.38	1.3	1.8	1.3
	Manganese	0.05				0.066			0.062
11/8 to 11/9	No Exceedances								
11/9 to 11/10	No Exceedances								
11/10 to 11/11	Benzene	0.32	1.7	1.6	1.6	1.8	1.7	1.6	
	Manganese	0.05				0.058			
11/12 to 11/13	No Exceedances								
11/13 to 11/14	Benzene	0.32	1.5	1.4	1.4	1.4	1.5	1.6	0.48
11/14 to 11/15	No Exceedances								
11/15 to 11/16	No Exceedances								
11/16 to 11/17	Benzene	0.32	2.0	1.7	1.8	1.8	2.3	2.1	
11/17 to 11/18	No Exceedances								
11/18 to 11/19	No Exceedances								
11/19 to 11/20	Benzene	0.32	2.7	2.2	2.0	2.4	1.7	2.9	2.5
	Manganese	0.05				0.093	0.065	0.153	0.077
11/20 to 11/21	No Exceedances								

Table 10
Concentrations Above PAMP Action Level - Daily Basis

Date	Compound	Air Concentration (µg/m ³)							
		PAMP	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
11/21 to 11/22	No Exceedances								
11/22 to 11/27	No Samples taken								
11/27 to 11/28	No Exceedances								
11/28 to 11/29	No Exceedances								
11/29 to 11/30	No Exceedances								
11/30 to 12/1	Benzene	0.32	3.0	2.7	2.7	2.5	2.4	2.8	
12/1 to 12/2	No Exceedances								
12/2 to 12/3	No Exceedances								
12/3 to 12/4	Benzene	0.32	2.1	1.9	1.8	1.8	2.0	2.0	1.9
	Manganese	0.05					0.086		
12/4 to 12/5	No Exceedances								
12/5 to 12/6	No Exceedances								
12/6 to 12/7	No Exceedances								
12/7 to 12/8	Benzene	0.32	2.5	2.5	2.4	2.3	2.1	2.2	
	Manganese	0.05				0.115			
12/8 to 12/9	No Exceedances								
12/9 to 12/10	No Exceedances								
12/10 to 12/11	No Exceedances								
12/11 to 12/12	Benzene	0.32		0.8	0.67	0.70	0.70	0.54	0.73
12/12 to 12/13	No Exceedances								
12/13 to 12/14	No Exceedances								
12/14 to 12/15	No Exceedances								
12/15 to 1/5	No Samples taken								
1/5 to 1/6	Benzene	0.32	3.35	3.51	3.39	3.48	3.39	3.90	
	Manganese	0.05				0.061			
1/6 to 1/29	No Samples taken								
1/29 to 1/30	Benzene	0.32	1.4	0.4	1.0	1.0	1.0	0.9	1.0
1/30 to 2/1	No Samples taken								
2/1 to 2/2	Benzene	0.32	2.7	2.6	2.91	2.7	2.7	5.91	
2/2 to 2/4	No Samples taken								
2/4 to 2/5	Benzene	0.32	3.42	2.7	2.49	2.8	1.21	2.08	2.20
2/5 to 2/7	No Samples taken								
2/7 to 2/8	Benzene	0.32		0.86	1.05	1.02	0.93	1.2	
2/8 to 2/13	No Samples taken								
2/13 to 2/14	Benzene	0.32		1.3	1.3	1.2	1.6	1.8	1.6
	Manganese	0.05					0.053		
2/14 to 2/16	No Samples taken								
2/16 to 2/17	Benzene	0.32	0.6	0.7	0.8	0.6	0.7	0.5	
2/17 to 2/23	No Samples taken								
2/23 to 2/24	Benzene	0.32	0.67	0.51	0.48		0.58	0.42	0.58
	Chromium ^(d)	0.042				0.085			
2/24 to 3/5	No Samples taken								
3/5 to 3/6	Benzene	0.32	0.96	0.73	0.80	0.83	0.54		
3/6 to 3/8	No Samples taken								
3/8 to 3/9	Benzene	0.32	0.64	0.45	0.61	0.61	0.48	0.61	0.64
	Chromium ^(d)	0.042						0.503	0.231
	Manganese	0.05				0.204	0.072		0.154
3/9 to 3/12	No Samples taken								
3/12 to 3/13	Benzene	0.32	0.77	1.0	0.67		0.64	0.67	
	Chromium ^(d)	0.042			0.083		0.188		

* Station G is a duplicate of Station D

(d) PAMP Action Level based on assumed total chromium ratio of 1:6 Chromium VI to Chromium III. PAMP Action Level for Chromium VI = 0.006, for Chromium III = 5. PAMP Action Levels shown in table = 7 x Chromium VI value.

(e) Data does not meet Quality Assurance Specifications

Table 11
Concentrations Above PRG-Daily Basis

Date	Compound	Air Concentration (µg/m ³)								
		Cancer PRG	Chronic PRG	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
8/31 to 9/1	Benzene	0.25	6.2				4.63			
9/1 to 9/8	No Samples taken									
9/8 to 9/9	Bis(2-ethylhexyl)phthalate	0.48	80		0.744					
9/9 to 9/10	Benzene	0.25	6.2	0.479	0.543	0.511	0.926	0.799	0.351	
	Carbon Tetrachloride	0.13	2.6		0.629				0.629	
	Manganese	NA	0.051				0.0612			
9/10 to 9/11	Benzene	0.25	6.2	0.479	0.447	0.575	0.607	0.639	0.735	
	Bis(2-ethylhexyl)phthalate	0.48	80					0.647		
	Carbon Tetrachloride	0.13	2.6					0.629		
	Manganese	NA	0.051				0.0744		0.0561	
9/11 to 9/12	Benzene	0.25	6.2	1.09	1.15	1.15	1.09	0.99	0.958	
	Carbon Tetrachloride	0.13	2.6						0.629	
	Manganese	NA	0.051		0.0586 ^(e)		0.0669		0.0729	
9/12 to 9/13	Benzene	0.25	6.2	3.45	2.88	3.45	2.84	2.78	2.04	
	Manganese	NA	0.051	0.0699		0.0619	0.0921	0.0788	0.173	
9/13 to 9/14	Benzene	0.25	6.2	0.799			0.511	0.671	0.671	
	Manganese	NA	0.051		0.0525 ^(e)		0.108		0.0848	
9/14 to 9/15	Benzene	0.25	6.2		0.415				1.50	
	Carbon Tetrachloride	0.13	2.6					0.629		
	Manganese	NA	0.051				0.104			
9/15 to 9/16	1,2,4-Trimethylbenzene	NA	6.2	77.2						
	1,3,5-Trimethylbenzene	NA	6.2	13.7						
	Aroclor 1260 (PCB)	0.0034	NA						0.0121	
	Benzene	0.25	6.2	0.383			0.319			
	Manganese	NA	0.051		0.0521 ^(e)		0.227	0.0901		
	Benzene	0.25	6.2	2.72	2.20	1.50	2.08	2.33	1.88	
9/16 to 9/17	Bis(2-ethylhexyl)phthalate	0.48	80	0.683						
	Carbon Tetrachloride	0.13	2.6		0.629				0.629	
	Manganese	NA	0.051	0.0606	0.116 ^(e)		0.122	0.107	0.0589	
9/17 to 9/18	Benzene	0.25	6.2	2.97	2.43	2.65	2.20	2.43	2.88	
	Chloroform	0.084	0.31				1.22			
9/18 to 9/19	Aluminum	NA	5.1				6.626		7.094	
	Aroclor 1260 (PCB)	0.0034	NA						0.0381	
	Arsenic	0.00045	NA				0.0038		0.0022	
	Benzene	0.25	6.2	1.50	1.28	1.92	1.15	1.53	1.12	
	Carbon Tetrachloride	0.13	2.6			1.636				
	Chloroform	0.084	0.31			1.17				
	Manganese	NA	0.051	0.0752	0.0775 ^(e)	0.0868	0.294	0.156	0.195	
9/19 to 9/20	1,2,4-Trimethylbenzene	NA	6.2			41				
	Aroclor 1260 (PCB)	0.0034	NA						0.0152	
	Arsenic	0.00045					0.002			
	Benzene	0.25	6.2	1.3	1.4	1.7	1.2	1.2	1.1	
	Manganese	NA	0.051				0.192	0.117	0.136	
9/20 to 9/21	Arsenic	0.00045	NA				0.003			
	Manganese	NA	0.051	0.0575			0.134			
	Benzene	0.25	6.2				0.4			
9/21 to 9/22	Carbon Tetrachloride	0.13	2.6	0.63						
	Manganese	NA	0.051	0.0738			0.1282			
9/22 to 9/23	Benzene	0.25	6.2	1.2	1.0		1.0	0.9	0.7	
	Manganese	NA	0.051			0.081	0.078			
9/23 to 9/24	No Samples taken									
9/24 to 9/25	Aroclor 1260 (PCB)	0.0034	NA						0.00861	
	Benzene	0.25	6.2	1.0	0.9	1.0	0.7	0.7	1.3	0.7
	Manganese	NA	0.051		0.0612	0.0540	0.122	0.0740		
9/25 to 9/26	Aroclor 1260 (PCB)	0.0034	NA						0.0127	
	Arsenic	0.00045	NA	0.004			0.003			
	Beryllium	0.0008	0.021			0.013				
	Benzene	0.25	6.2	0.42	0.51	0.64	0.51		0.83	
	Carbon Tetrachloride	0.13	2.6						1.32	
	Manganese	NA	0.051			0.0725	0.259	0.0559	0.0819	
9/26 to 9/27	Aroclor 1260 (PCB)	0.0034	NA						0.00448	
	Arsenic	0.00045	NA			0.002	0.004			
	Benzene	0.25	6.2		0.42					
	Manganese	NA	0.051			0.0716	0.226	0.0613	0.069	
9/27 to 9/28	Aroclor 1260 (PCB)	0.0034	NA					0.00382 ^(e)	0.00520	
	Arsenic	0.00045	NA		0.002					
	Manganese	NA	0.051				0.162			

Table 11
Concentrations Above PRG-Daily Basis

Date		Air Concentration (µg/m ³)								
		Cancer PRG	Chronic PRG	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
9/28 to 9/29	Aroclor 1260 (PCB)	0.0034	NA						0.0338	
	Arsenic	0.00045	NA				0.004		0.003	0.004
	Benzene	0.25	6.2	0.89	0.67	0.58	0.61	0.61	0.67	0.61
	Manganese	NA	0.051				0.166	0.0637	0.119	0.197
	Trichloroethene	1.1	22						1.4	
9/29 to 9/30	Aroclor 1260 (PCB)	0.0034	NA						0.0432	
	Arsenic	0.00045	NA	0.002						
	Benzene	0.25	6.2		1.5	1.4	1.3	1.5	1.1	
	Manganese	NA	0.051				0.185		0.173	
9/30 to 10/1	No Samples taken									
10/1 to 10/2	Aroclor 1260 (PCB)	0.0034	NA						0.0247 ^(e)	
	Arsenic	0.00045	NA			0.002				
	Benzene	0.25	6.2	0.45		0.42	0.32	0.73		
	Manganese	NA	0.051	0.107		0.085	0.127		0.146	0.084
10/2 to 10/3	Aroclor 1260 (PCB)	0.0034	NA					0.00408 ^(e)	0.00645 ^(e)	
	Arsenic	0.00045	NA	0.002		0.002	0.002			
	Manganese	NA	0.051	0.063		0.104	0.117	0.079	0.070	
10/3 to 10/4	Aroclor 1260 (PCB)	0.0034	NA						0.0208 ^(e)	
	Arsenic	0.00045	NA			0.003	0.002			
	Manganese	NA	0.051			0.093	0.119		0.052	0.083
	Benzene	0.25	6.2		0.45	0.32		0.35		
	Trichloroethene	1.1	22							6.3
10/4 to 10/5	Aroclor 1260 (PCB)	0.0034	NA						0.0156	
	Arsenic	0.00045	NA			0.002	0.002			
	Benzene	0.25	6.2	0.32	0.35					
	Carbon Tetrachloride	0.13	2.6	0.82				0.63		
	Manganese	NA	0.051			0.052	0.237		0.079	
10/5 to 10/6	Aroclor 1260 (PCB)	0.0034	NA						0.0138	
	Benzene	0.25	6.2							0.42
	Carbon Tetrachloride	0.13	2.6						0.63	0.76
	Manganese	NA	0.051				0.100		0.069	0.092
10/6 to 10/7	Aroclor 1260 (PCB)	0.0034	NA						0.00566	
	Benzene	0.25	6.2				0.32			
	Manganese	NA	0.051				0.063			
10/7 to 10/8	Aroclor 1260 (PCB)	0.0034	NA						0.00482	
	Benzene	0.25	6.2					0.32		
10/8 to 10/9	Aroclor 1260 (PCB)	0.0034	NA						0.00434	
	Carbon Tetrachloride	0.13	2.6	0.69						
	Manganese	NA	0.051				0.053			
10/9 to 10/10	Benzene	0.25	6.2				0.32			
10/10 to 10/11	Benzene	0.25	6.2	1.25			1.05			
	Manganese	NA	0.051				0.137			
10/11 to 10/12	Benzene	0.25	6.2	1.21	1.12		0.89	0.80		1.2
	Carbon Tetrachloride	0.13	2.6		0.63			0.63		
	Manganese	NA	0.051				0.074			0.052
10/12 to 10/13	Benzene	0.25	6.2	1.8 ^(e)	1.1 ^(e)	1.2 ^(e)	1.5 ^(e)	1.3 ^(e)	1.4 ^(e)	
	Carbon Tetrachloride	0.13	2.6		0.76					
	Manganese	NA	0.051				0.061			
10/13 to 10/14	Aluminum	NA	5.1			5.711				
	Aroclor 1260 (PCB)	0.0034	NA						0.00381 ^(e)	
	Arsenic	0.00045	NA			0.002				
	Benzene	0.25	6.2	1.6	1.2	1.3	1.1	1.3	1.0	1.2
	Carbon Tetrachloride	0.13	2.6	0.69		0.76				
	Manganese	NA	0.051			0.103	0.077			
10/14 to 10/15	Benzene	0.25	6.2	0.38		0.38	0.38			1.2
	Manganese	NA	0.051	0.070		0.075	0.086			
	Arsenic	0.00045	NA					0.002		
10/15 to 10/16	Benzene	0.25	6.2	3.1	2.1	1.8	2.2	1.9	2.4	1.7
	Manganese	NA	0.051				0.070			
10/16 to 10/17	Benzene	0.25	6.2	3.6	2.9	2.7	2.7	2.8	2.9	
	Manganese	NA	0.051				0.054	0.051	0.057	
10/17 to 10/18	Aroclor 1260 (PCB)	0.0034	NA						0.00403	
	Benzene	0.25	6.2	0.80	0.80	0.86	0.96	0.70	0.58	1.1
	Chloromethane	1.1	1900000000							6.3
	Manganese	NA	0.051			0.053	0.065			0.072
10/18 to 10/19	Benzene	0.25	6.2	0.61	0.61	0.32	0.45	0.54	0.48	
	TCDD Equivalency	0.000000045	6.2				0.0000000459 ^(e)			
10/19 to 10/20	Aroclor 1260 (PCB)	0.0034	NA						0.00368	
	Benzene	0.25	6.2	0.61	0.89	0.80	0.77	0.54	0.64	
	Manganese	NA	0.051			0.059	0.051		0.053	

Table 11
Concentrations Above PRG-Daily Basis

Date	Compound	Air Concentration (µg/m ³)								
		Cancer PRG	Chronic PRG	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
10/20 to 10/21	Aroclor 1260 (PCB)	0.0034	NA						0.00452	
	Benzene	0.25	6.2	0.67	0.73	0.83	0.61	0.61	0.67	1.0
	Manganese	NA	0.051		0.063	0.114	0.052			
10/21 to 10/22	No Exceedances									
10/22 to 10/23	No Exceedances									
10/23 to 10/24	No Exceedances									
10/24 to 10/25	Benzene	0.25	6.2	0.32	0.38		0.38	0.45	0.45	
	Manganese	NA	0.051	0.055	0.080	0.216	0.074			
10/25 to 10/26	No Exceedances									
10/26 to 10/27	No Exceedances									
10/27 to 10/28	Benzene	0.25	6.2					0.32	0.54	
10/28 to 10/29	No Exceedances									
10/29 to 10/30	No Exceedances									
10/30 to 10/31	No Exceedances									
10/31 to 11/1	No Exceedances									
11/1 to 11/2	Arsenic	0.00	NA		0.002					
	Benzene	0.25	6.2	2.2	0.7 ^(e)	1.8	1.8	1.9	1.7	1.8
11/2 to 11/3	No Exceedances									
11/3 to 11/4	No Exceedances									
11/4 to 11/5	Benzene	0.25	6.2	0.48	0.64	0.54	0.61	0.35	0.64	
11/5 to 11/6	No Exceedances									
11/6 to 11/7	No Exceedances									
11/7 to 11/8	1,2,4-Trimethylbenzene	NA	6.2			27				
	1,3,5-Trimethylbenzene	NA	6.2			7.2				
	Aroclor 1260 (PCB)	0.0034	NA						0.004	
	Benzene	0.25	6.2	1.6	2.0	3.1	0.38	1.3	1.8	1.3
	Carbon Tetrachloride	0.13	2.6		0.69			0.82	0.69	0.63
	Manganese	NA	0.051				0.066			0.062
11/8 to 11/9	Aroclor 1260 (PCB)	0.0034	NA						0.006	
11/9 to 11/10	No Exceedances									
11/10 to 11/11	Benzene	0.25	6.2	1.7	1.6	1.6	1.8	1.7	1.6	
	Carbon Tetrachloride	0.13	2.6	0.76	0.76	0.76		0.82		
	Chloromethane	1.1	1900000000		2.2		3.1	7.4		
	Manganese	NA	0.051				0.058			
11/11 to 11/12	Aroclor 1260 (PCB)	0.0034	NA						0.004	
11/12 to 11/13	No Exceedances									
11/13 to 11/14	Benzene	0.25	6.2	1.5	1.4	1.4	1.4	1.5	1.6	0.48
	Carbon Tetrachloride	0.13	2.6		0.69	0.76	0.69	0.88	0.69	
	Chloromethane	1.1	1900000000					1.1		
11/14 to 11/15	No Exceedances									
11/15 to 11/16	No Exceedances									
11/16 to 11/17	Arsenic	0.00045	NA			0.002				
	Benzene	0.25	6.2	2.0	1.7	1.8	1.8	2.3	2.1	
	Carbon Tetrachloride	0.13	2.6		0.88	0.82	0.82	0.69	0.69	
	Chloromethane	1.1	1900000000					1.1		
11/17 to 11/18	No Exceedances									
11/18 to 11/19	No Exceedances									
11/19 to 11/20	Arsenic	0.00045	NA				0.003		0.002	
	Benzene	0.25	6.2	2.7	2.2	2.0		1.7	2.9	2.5
	Carbon Tetrachloride	0.13	2.6	0.82			0.63			0.82
	Chloromethane	1.1	1900000000	1.1						
	Manganese	NA	0.051				0.093	0.065	0.153	0.077
11/20 to 11/21	No Exceedances									
11/21 to 11/22	No Exceedances									
11/22 to 11/27	No Samples taken									
11/27 to 11/28	No Exceedances									
11/28 to 11/29	No Exceedances									
11/29 to 11/30	No Exceedances									
11/30 to 12/1	Arsenic	0.00045	NA			0.002		0.002		
	Benzene	0.25	6.2	3.0	2.7	2.7	2.5	2.4	2.8	
	Carbon Tetrachloride	0.13	2.6	0.76		0.69	0.76	0.63		
	Chloromethane	1.1	1900000000	1.1						
12/1 to 12/2	No Exceedances									
12/2 to 12/3	No Exceedances									
12/3 to 12/4	Arsenic	0.00045	NA						0.002	0.002
	Benzene	0.25	6.2	2.1	1.9	1.8	1.8	2.0	2.0	1.9
	Carbon Tetrachloride	0.13	2.6		0.88		0.63			0.76
	Manganese	NA	0.051					0.086		
12/4 to 12/5	No Exceedances									
12/5 to 12/6	No Exceedances									

Table 11
Concentrations Above PRG-Daily Basis

Date	Compound	Air Concentration (µg/m ³)								
		Cancer PRG	Chronic PRG	Station A	Station B	Station C	Station D	Station E	Station F	Station G*
12/6 to 12/7	No Exceedances									
12/7 to 12/8	Arsenic	0.00045	NA			0.003	0.002			
	Benzene	0.25	6.2	2.5	2.5	2.4	2.3	2.1	2.2	
	Carbon Tetrachloride	0.13	2.6	0.63	0.69	0.69	0.69			
	Chloromethane	1.1	1900000000		1.1					
	Manganese	NA	0.051				0.115			
12/8 to 12/9	No Exceedances									
12/9 to 12/10	Aroclor 1260 (PCB)	0.0034	NA						0.004 ^(e)	
12/10 to 12/11	No Exceedances									
12/11 to 12/12	Arsenic	0.00045	NA						0.003	
	Benzene	0.25	6.2		0.8	0.67	0.70	0.70	0.54	0.73
	Carbon Tetrachloride	0.13	2.6		0.82					0.82
12/12 to 12/13	No Exceedances									
12/13 to 12/14	No Exceedances									
12/14 to 12/15	Aroclor 1260 (PCB)	0.0034	NA						0.004	
12/15 to 1/5	No Samples taken									
1/5 to 1/6	Arsenic	0.00045	NA				0.002		0.002	
	Benzene	0.25	6.2	3.35	3.51	3.39	3.48	3.39	3.90	
	Carbon Tetrachloride	0.13	2.6		1.0	0.63	0.94	0.69	0.63	
	Chloromethane	1.1	1900000000				1.7			
	Manganese	NA	0.051				0.061			
	Methylene Chloride	4.1	3,100		4.24					
	Tetrachloroethene	3.3	420	3.5		3.5	3.4		3.7	
1/6 to 1/29	No Samples taken									
1/29 to 1/30	Benzene	0.25	6.2	1.4	0.4	1.0	1.0	1.0	0.9	1.0
	Carbon Tetrachloride	0.13	2.6			0.82	0.88	0.63	0.69	0.63
1/30 to 2/1	No Samples taken									
2/1 to 2/2	Arsenic	0.00045	NA	0.002			0.002			
	Benzene	0.25	6.2	2.7	2.6	2.91	2.7	2.7	5.91	
	Chloromethane	1.1	1900000000			1.57				
	Methylene Chloride	4.1	3100						4.48	
2/2 to 2/4	No Samples taken									
2/4 to 2/5	Benzene	0.25	6.2	3.42	2.7	2.49	2.8	1.21	2.08	2.20
	Carbon Tetrachloride	0.13	2.6				0.63			
	Chloromethane	1.1	1900000000	10.9	1.4	1.4	1.1			
2/5 to 2/7	No Samples taken									
2/7 to 2/8	Benzene	0.25	6.2		0.86	1.05	1.02	0.93	1.2	
	Chloromethane	1.1	1900000000						1.5	
2/8 to 2/13	No Samples taken									
2/13 to 2/14	Benzene	0.25	6.2		1.3	1.3	1.2	1.6	1.8	1.6
	Carbon Tetrachloride	0.13	2.6		0.69					
	Chloromethane	1.1	1900000000		1.7					
	Manganese	NA	0.051					0.053		
2/14 to 2/16	No Samples taken									
2/16 to 2/17	Arsenic	0.00045	NA		0.002					
	Benzene	0.25	6.2	0.6	0.7	0.8	0.6	0.7	0.5	
2/17 to 2/23	No Samples taken									
2/23 to 2/24	Arsenic	0.00045	NA					0.003		
	Benzene	0.25	6.2	0.67	0.51	0.48		0.58	0.42	0.58
	Carbon Tetrachloride	0.13	2.6					0.76		
	Chloromethane	1.1	1900000000		1.4					
	Chromium ^(d)	0.000164	NA				0.085			
	Tetrahydrofuran	0.99	310					28.2		
2/24 to 3/5	No Samples taken									
3/5 to 3/6	Benzene	0.25	6.2	0.96	0.73	0.80	0.83	0.54		
3/6 to 3/8	No Samples taken									
3/8 to 3/9	Aluminum	NA	5.1				7.139			
	Benzene	0.25	6.2	0.64	0.45	0.61	0.61	0.48	0.61	0.64
	Chromium ^(d)	0.000164	NA						0.503	0.231
	Manganese	NA	0.051				0.204	0.072		0.154
3/9 to 3/12	No Samples taken									
3/12 to 3/13	Benzene	0.25	6.2	0.77	1.0	0.67		0.64	0.67	
	Carbon Tetrachloride	0.13	2.6					0.69		
	Chloromethane	1.1	1900000000		6.2					
	Chromium ^(d)	0.000164	NA			0.083		0.188		

* Station G is a duplicate of Station D

(d) Cancer PRG based on assumed total chromium ratio of 1:6 Chromium VI to Chromium III.

Cancer PRG for Chromium VI = 2.3 E-5. PRGs shown in table = 7 x Chromium VI value.

(e) Data does not meet Quality Assurance Specifications

Table 12
Detected Compound Statistics

Compound	# Days Sampled	# Days Detected	# Total Samples	# Total Detections	Minimum Detection (µg/m³)	Maximum Detection (µg/m³)	PAMP Action Level (µg/m³)	# Days Exceeding PAMP	Stations Exceeding PAMP	Cancer PRG (µg/m³)	Chronic PRG (µg/m³)	# Days Exceeding PRGs	Stations Exceeding PRGs
Metals (particulate)													
Aluminum	62	15	374	24	2.314	7.139	150	0	0	5.1	-	3	3
Arsenic	62	27	374	41	0.002	0.005	0.014	0	0	0.00045	-	27	7
Barium	62	7	374	10	0.122	0.199	-	NA	NA	-	0.52	0	0
Beryllium	62	1	374	1	0.013	0.013	0.03	0	0	0.0008	0.021	1	1
Chromium (Total) *	62	3	374	5	0.083	0.503	0.042	3	5	0.00016	-	3	5
Cobalt	62	2	374	2	0.012	0.013	-	NA	NA	-	-	NA	NA
Copper	62	62	374	371	0.013	1.016	10	0	0	-	-	NA	NA
Lead	62	42	374	119	0.0239	0.281	1.5	0	0	-	-	NA	NA
Manganese	62	59	374	321	0.012	0.294	0.05	44	7	-	0.051	44	7
Molybdenum	62	2	374	3	0.028	0.124	-	NA	NA	-	-	NA	NA
Nickel	62	3	374	3	0.145	0.319	10	0	0	-	-	NA	NA
Zinc	62	4	374	4	0.248	0.360	1050	0	0	-	-	NA	NA
VOCs													
1,2,4-Trimethylbenzene	64	15	388	29	2.56	77.20	-	NA	NA	-	6.2	4	3
1,3,5-Trimethylbenzene	64	3	388	3	5.10	13.70	-	NA	NA	-	6.2	2	2
Benzene	64	60	388	306	0.319	5.910	0.32	60	7	0.25	6.2	60	7
Carbon Tetrachloride	64	27	388	69	0.629	1.636	-	NA	NA	0.13	2.6	27	7
Chlorobenzene	64	1	388	1	0.875	0.875	-	NA	NA	-	62	0	0
Chloroethane	64	4	388	4	0.530	1.800	-	NA	NA	2.3	10000	0	0
Chloroform	64	2	388	2	1.170	1.220	-	NA	NA	0.084	0.31	2	2
Chloromethane	64	22	388	55	0.410	10.900	-	NA	NA	1.1	1900000000	14	7
Cis-1,2-Dichloroethene	64	2	388	2	2.10	6.30	-	NA	NA	37	-	0	0
Dichlorodifluoromethane	64	64	388	378	1.00	6.13	-	NA	NA	-	210	0	0
Ethylbenzene	64	33	388	141	0.43	12.30	-	NA	NA	-	1100	0	0
Methylene Chloride	64	12	388	21	1.70	4.80	-	NA	NA	4.1	3100	2	2
Styrene	64	15	388	29	0.426	5.92	-	NA	NA	-	1100	0	0
Tetrachloroethene	64	16	388	38	0.68	3.70	35	0	0	3.3	420	1	4
Toluene	64	64	388	355	0.75	25.80	-	NA	NA	-	400	0	0
Trichloroethene	64	4	388	4	0.70	6.30	-	NA	NA	1.1	-	2	2
Trichlorofluoromethane	64	61	388	260	1.10	3.00	-	NA	NA	-	730	0	0
Xylenes (Total)	64	56	388	277	0.87	46.30	4350	0	0	-	730	0	0
Pesticides/PCBs													
Endrin	38	1	231	1	0.583	0.583	-	NA	NA	-	1.1	0	0
Aroclor 1260	101	32	596	34	0.0030	0.0432	0.01	10	1	0.0034	-	27	2
SVOCs													
2-Methylnaphthalene	38	2	231	2	0.00316	0.00342	-	NA	NA	-	-	NA	NA
Acenaphthylene	38	19	231	36	0.000687	0.01230	-	NA	NA	-	-	NA	NA
Anthracene	38	19	231	27	0.00325	0.01370	-	NA	NA	-	1100	0	0
Bis(2-ethylhexyl)phthalate	38	36	231	160	0.000619	0.74400	0.018	11	7	0.48	80	3	3
Butyl Benzyl Phthalate	38	19	231	50	0.000981	0.24600	-	NA	NA	-	730	0	0
Dibenzofuran	38	24	231	41	0.000855	0.01000	-	NA	NA	-	15	0	0
Diethylphthalate	38	38	231	211	0.000645	0.444000	-	NA	NA	-	2900	0	0
Di-n-butylphthalate	38	38	231	206	0.000545	0.082000	-	NA	NA	-	370	0	0
Di-n-octyl phthalate	38	1	231	1	0.0119	0.0119	-	NA	NA	-	73	0	0
Fluoranthene	38	29	231	64	0.000645	0.021100	-	NA	NA	-	150	0	0
Fluorene	38	29	231	63	0.00127	0.01690	-	NA	NA	-	150	0	0
Naphthalene	38	1	231	3	0.00298	0.00416	-	NA	NA	-	3.1	0	0
Phenanthrene	38	37	231	201	0.000944	0.10000	-	NA	NA	-	-	NA	NA
Pyrene	38	20	231	44	0.000577	0.020800	-	NA	NA	-	110	0	0
High Resolution Dioxin/Furans													
2,3,7,8-Tetrachlorodibenzofuran	5	5	29	29	0.0000000002	0.0000000459	-	NA	NA	0.000000045	-	1	1
Chlorine Compounds													
Particulate Chloride	18	16	104	73	1.90	23.50	-	NA	NA	-	-	NA	NA

NA: not applicable

* PAMP Action Level and Cancer PRG are based on assumed total chromium ratio of 1:6 Chromium VI to Chromium III. PAMP Action Level for Chromium VI = 0.006, for Chromium III = 5. Cancer PRG for Chromium VI = 2.3 E⁻⁵. PAMP Action Level and PRGs shown in table = 7 x Chromium VI value.

Table 13
Hunters Point Shipyard, Parcel E
Tentatively Identified Compounds (TICs)

Compound	Sample Date	Sample Station	Detected Concentration (µg/m3)	HPS Action Level (µg/m3)	Cancer PRG (µg/m3)	Chronic PRG (µg/m3)
Heptadecane, 9-octyl-	08/31/00	-	0.200	-	-	-
Naphthalene, decahydro-4a-methyl-	08/31/00	-	0.169	-	-	-
Vanillin	08/31/00	-	0.0955	-	-	-
Phenol,2,6-dimethoxy-	08/31/00	-	0.0811	-	-	-
Lup-20(20)-en-3-one	08/31/00	-	0.0577	-	-	-
Acetone	09/15/00	A	6.78	na	na	365
Acetone	10/11/00	E	4.22	na	na	365
Benzene,1-ethyl-2methyl	09/15/00	A	8.93	na	na	na
Benzene,1-ethyl-3methyl	09/15/00	A	5.50	na	na	na
Benzene,1-ethyl-2-(1-methylethyl)	09/15/00	A	5.75	na	na	na
Hexane	09/18/00	B	19.06	na	na	208.57
Hexane	09/18/00	F	24.76	na	na	208.57
Tetrahydrofuran	02/23/01	E	28.20	na	0.98878	312.805

Table 14
Hunters Point Shipyard, Parcel E
Quality Assurance Summary

Date	Sample	Station	PUF 7-Pt Calibration Required	PUF Single-Pt Flow Check Not Available	> 10% PUF Flow Difference	Air Monitoring Sample Logs	Magnehelic® Hourly Readings Not Available	TSP Calibration Required	Sample Volume
09/08/00	PUF	A							X
09/08/00	PUF	E							X
09/08/00	PUF	F							X
09/09/00	TSP	B						X	
09/10/00	TSP	B						X	
09/11/00	TSP	B						X	
09/13/00	TSP	B						X	
09/14/00	TSP	B						X	
09/15/00	PUF	C		X					
09/15/00	TSP	B						X	
09/16/00	TSP	B						X	
09/18/00	TSP	B						X	
09/19/00	PUF	E			X				
09/19/00	PUF	G		X					
09/19/00	TSP	B						X	
09/20/00	PUF	E	X						
09/20/00	TSP	B						X	
09/21/00	PUF	E	X						
09/21/00	PUF	G		X					
09/21/00	TSP	B						X	
09/22/00	PUF	E	X						
09/22/00	TSP	B						X	
09/24/00	PUF	E	X						
09/24/00	PUF	G		X					
09/24/00	Hi Res PUF	A		X					
09/24/00	Hi Res PUF	B		X					
09/24/00	Hi Res PUF	D		X					
09/24/00	Hi Res PUF	E		X					
09/24/00	Hi Res PUF	F		X					
09/25/00	PUF	E	X						

Table 14
Hunters Point Shipyard, Parcel E
Quality Assurance Summary

Date	Sample	Station	PUF 7-Pt Calibration Required	PUF Single-Pt Flow Check Not Available	> 10% PUF Flow Difference	Air Monitoring Sample Logs	Magnehelic® Hourly Readings Not Available	TSP Calibration Required	Sample Volume
09/26/00	PUF	E	X						
09/26/00	PUF	G		X					
09/27/00	PUF	E	X						
09/28/00	PUF	E	X						
09/28/00	PUF	G		X					
09/29/00	PUF	A		X					
09/29/00	PUF	B		X					
10/01/00	PUF	D		X					
10/01/00	PUF	E	X						
10/01/00	PUF	F		X					
10/01/00	PUF	G		X					
10/02/00	PUF	A				X	X		
10/02/00	PUF	B				X	X		
10/02/00	PUF	C				X	X		
10/02/00	PUF	D				X	X		
10/02/00	PUF	E	X			X	X		
10/02/00	PUF	F				X	X		
10/02/00	Hi Res PUF	A		X					
10/02/00	Hi Res PUF	B		X					
10/02/00	Hi Res PUF	C		X					
10/02/00	Hi Res PUF	D		X					
10/02/00	Hi Res PUF	E		X					
10/02/00	Hi Res PUF	F		X					
10/03/00	PUF	E	X						
10/03/00	PUF	F							X
10/03/00	PUF	G		X					
10/04/00	PUF	E	X						
10/05/00	PUF	E	X						
10/05/00	PUF	G		X					
10/06/00	PUF	E	X						

Table 14
Hunters Point Shipyard, Parcel E
Quality Assurance Summary

Date	Sample	Station	PUF 7-Pt Calibration Required	PUF Single-Pt Flow Check Not Available	> 10% PUF Flow Difference	Air Monitoring Sample Logs	Magnehelic® Hourly Readings Not Available	TSP Calibration Required	Sample Volume
10/07/00	PUF	E	X						
10/07/00	PUF	G		X					
10/08/00	PUF	E	X						
10/09/00	PUF	E	X						
10/10/00	PUF	E	X						
10/11/00	PUF	E	X						
10/12/00	PUF	A				X			
10/12/00	PUF	B				X			
10/12/00	PUF	C				X			
10/12/00	PUF	D				X			
10/12/00	PUF	E	X			X			
10/12/00	PUF	F				X			
10/12/00	VOC	A				X			
10/12/00	VOC	B				X			
10/12/00	VOC	C				X			
10/12/00	VOC	D				X			
10/12/00	VOC	E				X			
10/12/00	VOC	F				X			
10/13/00	PUF	A					X		
10/13/00	PUF	B			X		X		
10/13/00	PUF	C					X		
10/13/00	PUF	D					X		
10/13/00	PUF	E	X				X		
10/13/00	PUF	F					X		
10/13/00	PUF	G					X		
10/14/00	PUF	A					X		
10/14/00	PUF	B	X				X		
10/14/00	PUF	C					X		
10/14/00	PUF	D					X		
10/14/00	PUF	E	X				X		
10/14/00	PUF	F				X	X		
10/15/00	PUF	A					X		

Table 14
Hunters Point Shipyard, Parcel E
Quality Assurance Summary

Date	Sample	Station	PUF 7-Pt Calibration Required	PUF Single-Pt Flow Check Not Available	> 10% PUF Flow Difference	Air Monitoring Sample Logs	Magnehelic® Hourly Readings Not Available	TSP Calibration Required	Sample Volume
10/15/00	PUF	B	X				X		
10/15/00	PUF	C					X		
10/15/00	PUF	D					X		
10/15/00	PUF	E	X				X		
10/15/00	PUF	F					X		
10/15/00	PUF	G					X		
10/16/00	PUF	B	X						
10/17/00	PUF	B	X						X
10/17/00	PUF	G			X				
10/17/00	TSP	C							X
10/18/00	Hi Res PUF	D							X
10/21/00	PUF	A			X				
10/21/00	PUF	D			X				
10/22/00	PUF	A	X				X		
10/22/00	PUF	B					X		
10/22/00	PUF	C					X		
10/22/00	PUF	D	X				X		
10/22/00	PUF	E					X		
10/22/00	PUF	F					X		
10/22/00	PUF	G				X	X		
10/23/00	PUF	A	X						
10/23/00	PUF	D	X						
10/24/00	PUF	A	X						
10/24/00	PUF	D	X						
10/31/00	PUF	D	X			X			
11/01/00	PUF	B				X			
11/01/00	PUF	D	X			X			
11/01/00	VOC	B				X			
11/01/00	TSP	C				X			
11/02/00	PUF	D	X			X			
11/03/00	PUF	A	X						
11/03/00	PUF	D	X			X			

Table 14
Hunters Point Shipyard, Parcel E
Quality Assurance Summary

Date	Sample	Station	PUF 7-Pt Calibration Required	PUF Single-Pt Flow Check Not Available	> 10% PUF Flow Difference	Air Monitoring Sample Logs	Magnehelic® Hourly Readings Not Available	TSP Calibration Required	Sample Volume
11/04/00	PUF	A	X						
11/04/00	PUF	D	X			X			
11/04/00	TSP	C				X			
11/04/00	TSP	D				X			
11/05/00	PUF	A	X						
11/05/00	PUF	D	X			X			X
11/07/00	PUF	G				X			
11/15/00	PUF	A				X			X
11/28/00	PUF	B				X			X
12/04/00	PUF	D		X					
12/09/00	PUF	A				X			
12/09/00	PUF	B				X			
12/09/00	PUF	C				X			
12/09/00	PUF	D				X			
12/09/00	PUF	E				X			
12/09/00	PUF	F				X			
12/10/00	PUF	A				X			
12/10/00	PUF	B				X			
12/10/00	PUF	C				X			
12/10/00	PUF	D				X			
12/10/00	PUF	E				X			
12/10/00	PUF	F				X			
12/10/00	PUF	G				X			

Table 15
Hunters Point, Parcel E
Low Resolution PUF 7-Point and Flow Check Quality Assurance

Sample Date	Station A		Station B		Station C		Station D		Station E		Station F		Station G	
	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.
09/08/00	09/08/00	7-pt; In	09/08/00	7-pt; In	09/08/00	7-pt; In	09/08/00	7-pt; In	09/08/00	7-pt; In	09/08/00	7-pt; In	NA	NS
09/09/00	09/08/00	In	09/08/00	In	09/08/00	In	09/08/00	In	09/08/00	In	09/08/00	In	NA	NS
09/10/00	09/08/00	In	09/08/00	In	09/08/00	In	09/08/00	In	09/08/00	In	09/08/00	In	NA	NS
09/11/00	09/08/00	In	09/08/00	In	09/08/00	In	09/08/00	In	09/08/00	In	09/08/00	In	NA	NS
09/12/00	09/08/00	In	09/08/00	NS; In	09/08/00	In	09/08/00	In	09/08/00	In	09/08/00	In	NA	NS
09/13/00	09/08/00	In	09/13/00	7-pt; In	09/08/00	NS	09/08/00	In	09/08/00	In	09/08/00	In	NA	NS
09/14/00	09/08/00	In	09/13/00	In	09/08/00	NS	09/08/00	NS	09/08/00	In	09/08/00	In	NA	NS
09/15/00	09/08/00	In	09/13/00	In	09/08/00	na	09/08/00	In	09/08/00	NS; In	09/08/00	In	NA	NS
09/16/00	09/08/00	In	09/13/00	In	09/08/00	In	09/08/00	NS; In	09/16/00	7-pt; In	09/08/00	In	NA	NS
09/17/00	09/08/00	In	09/13/00	In	09/08/00	In	09/08/00	In	09/16/00	In	09/08/00	In	09/17/00	7-pt; In
09/18/00	09/08/00	In	09/13/00	In	09/08/00	In	09/08/00	In	09/16/00	In	09/08/00	In	09/17/00	NS
09/19/00	09/08/00	NS; In	09/13/00	In	09/08/00	In	09/08/00	In	09/16/00	Out	09/08/00	In	09/17/00	na
09/20/00	09/08/00	In	09/13/00	In	09/08/00	In	09/08/00	In	09/16/00	Out	09/08/00	In	09/17/00	NS
09/21/00	09/08/00	In	09/13/00	In	09/08/00	In	09/08/00	In	09/16/00	Out	09/08/00	In	09/17/00	na
09/22/00	09/08/00	In	09/13/00	In	09/08/00	In	09/08/00	In	09/16/00	Out	09/08/00	In	09/17/00	NS
09/23/00	09/08/00	NS	09/13/00	NS	09/08/00	NS	09/08/00	NS	09/16/00	NS	09/08/00	NS	09/17/00	NS
09/24/00	09/24/00	7-pt; In	09/24/00	7-pt; In	09/24/00	7-pt; NS	09/24/00	7-pt; In	09/16/00	Out	09/24/00	7-pt; In	09/17/00	In
09/25/00	09/24/00	In	09/24/00	In	09/24/00	In	09/24/00	In	09/16/00	Out	09/24/00	In	09/17/00	NS
09/26/00	09/24/00	In	09/24/00	In	09/24/00	In	09/24/00	In	09/16/00	Out	09/24/00	In	09/17/00	na
09/27/00	09/24/00	In	09/24/00	In	09/24/00	In	09/24/00	In	09/16/00	Out	09/24/00	In	09/17/00	NS
09/28/00	09/24/00	In	09/24/00	In	09/24/00	NS; In	09/24/00	In	09/16/00	Out	09/24/00	In	09/17/00	na
09/29/00	09/24/00	na	09/24/00	na	09/24/00	NS	09/29/00	7-pt; In	09/16/00	NS	09/29/00	7-pt; In	09/17/00	NS
09/30/00	09/30/00	7-pt; NS	09/30/00	7-pt; NS	09/30/00	7-pt; NS	09/29/00	NS	09/16/00	NS	09/29/00	NS	09/17/00	NS
10/01/00	09/30/00	7-pt	09/30/00	7-pt; In	09/30/00	In	09/29/00	na	09/16/00	Out	09/29/00	na	09/17/00	na
10/02/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	NS
10/03/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	na
10/04/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	NS
10/05/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	na
10/06/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	NS
10/07/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	na

na : no flow check available
NS: Not Sampled
NA: Not Applicable
In: within specifications
Out: not within specifications

Table 15
Hunters Point, Parcel E
Low Resolution PUF 7-Point and Flow Check Quality Assurance

Sample Date	Station A		Station B		Station C		Station D		Station E		Station F		Station G	
	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.
10/08/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	NS
10/09/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	In
10/10/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	NS
10/11/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	In
10/12/00	09/30/00	In	09/30/00	In	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	NS
10/13/00	09/30/00	In	09/30/00	Out (10/18)	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	In
10/14/00	09/30/00	In	09/30/00	Out	09/30/00	In	09/29/00	In	09/16/00	Out	09/29/00	In	09/17/00	NS
10/15/00	09/30/00	In	09/30/00	Out	09/30/00	In	09/29/00	In	09/16/00	Out	10/15/00	7-pt; In	09/17/00	In
10/16/00	09/30/00	In	09/30/00	Out	09/30/00	In	09/29/00	In	10/16/00	NS	10/15/00	In	09/17/00	NS
10/17/00	09/30/00	In	09/30/00	Out	09/30/00	In	09/29/00	In	10/16/00	7-pt; In	10/15/00	In	09/17/00	Out (10/18)
10/18/00	10/18/00	In	10/18/00	NS	10/18/00	NS; In	10/18/00	NS; In	10/16/00	NS; In	10/15/00	NS; In	10/18/00	NS
10/19/00	10/18/00	7-pt; In	10/18/00	7-pt; In	10/18/00	7-pt; In	10/18/00	7-pt; In	10/16/00	In	10/15/00	In	10/18/00	NS
10/20/00	10/18/00	In	10/18/00	In	10/18/00	In	10/18/00	In	10/16/00	NS	10/15/00	In	10/18/00	7-pt; In
10/21/00	10/18/00	Out (11/6)	10/18/00	In	10/18/00	In	10/18/00	Out (11/6)	10/16/00	NS	10/15/00	In	10/18/00	NS
10/22/00	10/18/00	Out	10/18/00	In	10/18/00	In	10/18/00	Out	10/16/00	In	10/15/00	In	10/18/00	In
10/23/00	10/18/00	Out	10/18/00	In	10/18/00	In	10/18/00	Out	10/16/00	In	10/15/00	In	10/18/00	NS
10/24/00	10/18/00	Out	10/18/00	In	10/18/00	In	10/18/00	Out	10/16/00	In	10/15/00	In	10/18/00	In
10/25/00	10/18/00	NS	10/18/00	In	10/18/00	In	10/18/00	NS; In	10/16/00	In	10/15/00	In	10/18/00	NS
10/26/00	10/18/00	NS	10/18/00	NS	10/18/00	NS	10/18/00	NS	10/16/00	In	10/15/00	In	10/18/00	NS
10/27/00	10/18/00	NS	10/18/00	NS	10/18/00	NS	10/18/00	NS	10/16/00	In	10/15/00	In	10/18/00	NS
10/28/00	10/18/00	NS	10/18/00	NS	10/18/00	NS	10/18/00	NS	10/16/00	In	10/15/00	NS; In	10/18/00	NS
10/29/00	10/18/00	NS	10/18/00	NS	10/18/00	NS	10/18/00	NS	10/16/00	In	10/15/00	In	10/18/00	NS
10/30/00	10/18/00	NS	10/18/00	NS	10/18/00	NS	10/18/00	NS	10/16/00	In	10/15/00	In	10/18/00	NS
10/31/00	10/18/00	NS	10/18/00	In	10/18/00	In	10/18/00	Out	10/16/00	In	10/15/00	In	10/18/00	NS
11/01/00	10/18/00	NS	10/18/00	In	10/18/00	In	10/18/00	Out	10/16/00	In	10/15/00	In	10/18/00	In
11/02/00	10/18/00	NS	10/18/00	In	10/18/00	In	10/18/00	Out	10/16/00	In	10/15/00	In	10/18/00	NS
11/03/00	10/18/00	Out	10/18/00	In	10/18/00	In	10/18/00	Out	10/16/00	In	10/15/00	In	10/18/00	In
11/04/00	10/18/00	Out	10/18/00	In	10/18/00	In	10/18/00	Out	10/16/00	In	10/15/00	In	10/18/00	NS
11/05/00	10/18/00	Out	10/18/00	Out (11/6)	10/18/00	In	10/18/00	Out	10/16/00	In	10/15/00	In	10/18/00	In
11/06/00	11/06/00	7-pt; In	11/06/00	7-pt; In	10/18/00	In	11/06/00	7-pt; In	10/16/00	In	10/15/00	In	11/06/00	7-pt; NS

na : no flow check available

NS: Not Sampled

NA: Not Applicable

In: within specifications

Out: not within specifications

Table 15
Hunters Point, Parcel E
Low Resolution PUF 7-Point and Flow Check Quality Assurance

Sample Date	Station A		Station B		Station C		Station D		Station E		Station F		Station G	
	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.
11/07/00	11/06/00	In	11/06/00	In	11/07/00	7-pt; NS	11/06/00	In	11/07/00	7-pt; In	11/07/00	7-pt; In	11/06/00	In
11/08/00	11/06/00	In	11/06/00	In	11/08/00	7-pt; NS	11/06/00	In	11/07/00	In	11/07/00	In	11/06/00	NS
11/09/00	11/06/00	In	11/06/00	In	11/08/00	NS; In	11/06/00	In	11/07/00	In	11/07/00	In	11/09/00	7-pt; In
11/10/00	11/06/00	In	11/06/00	In	11/10/00	7-pt; In	11/06/00	In	11/07/00	In	11/07/00	NS; In	11/09/00	NS
11/11/00	11/06/00	In	11/06/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	7-pt; In	11/09/00	In
11/12/00	11/06/00	In	11/06/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	NS
11/13/00	11/06/00	In	11/06/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	In
11/14/00	11/06/00	NS; In	11/06/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	NS
11/15/00	11/15/00	7-pt; In	11/06/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	In
11/16/00	11/15/00	In	11/06/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	NS
11/17/00	11/15/00	In	11/06/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	In
11/18/00	11/15/00	In	11/06/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	NS
11/19/00	11/15/00	In	11/06/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	In
11/20/00	11/15/00	In	11/06/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	NS
11/21/00	11/15/00	In	11/06/00	NS	11/10/00	NS; In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	In
11/22/00	11/15/00	NS	11/06/00	NS	11/10/00	NS	11/06/00	NS	11/07/00	NS	11/11/00	NS	11/09/00	NS
11/23/00	11/15/00	NS	11/06/00	NS	11/10/00	NS	11/06/00	NS	11/07/00	NS	11/11/00	NS	11/09/00	NS
11/24/00	11/15/00	NS	11/06/00	NS	11/10/00	NS	11/06/00	NS	11/07/00	NS	11/11/00	NS	11/09/00	NS
11/25/00	11/15/00	NS	11/06/00	NS	11/10/00	NS	11/06/00	NS	11/07/00	NS	11/11/00	NS	11/09/00	NS
11/26/00	11/15/00	NS	11/06/00	NS	11/10/00	NS	11/06/00	NS	11/07/00	NS	11/11/00	NS	11/09/00	NS
11/27/00	11/15/00	In	11/27/00	7-pt; In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	NS
11/28/00	11/15/00	In	11/27/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/09/00	NS; In
11/29/00	11/15/00	In	11/27/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/29/00	NS
11/30/00	11/15/00	In	11/27/00	In	11/10/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/29/00	7-pt; In
12/01/00	11/15/00	In	11/27/00	In	11/10/00	NS; In	11/06/00	In	11/07/00	In	11/11/00	In	11/29/00	NS
12/02/00	11/15/00	In	11/27/00	In	12/02/00	7-pt; In	11/06/00	In	11/07/00	In	11/11/00	In	11/29/00	In
12/03/00	11/15/00	In	11/27/00	In	12/02/00	In	11/06/00	In	11/07/00	In	11/11/00	In	11/29/00	NS
12/04/00	12/04/00	7-pt; In	11/27/00	In	12/02/00	In	12/04/00	7-pt; In	12/04/00	7-pt; In	12/04/00	7-pt; In	12/04/00	7-pt; In
12/05/00	12/04/00	In	11/27/00	In	12/02/00	In	12/04/00	In	12/04/00	In	12/04/00	In	12/04/00	NS
12/06/00	12/04/00	In	11/27/00	In	12/02/00	In	12/04/00	In	12/04/00	In	12/04/00	In	12/04/00	In

na : no flow check available
 NS: Not Sampled
 NA: Not Applicable
 In: within specifications
 Out: not within specifications

Table 15
Hunters Point, Parcel E
Low Resolution PUF 7-Point and Flow Check Quality Assurance

Sample Date	Station A		Station B		Station C		Station D		Station E		Station F		Station G	
	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.
12/07/00	12/04/00	In	11/27/00	In	12/02/00	In	12/04/00	In	12/04/00	In	12/04/00	In	12/04/00	NS
12/08/00	12/04/00	In	11/27/00	In	12/02/00	In	12/04/00	In	12/04/00	In	12/04/00	In	12/04/00	In
12/09/00	12/04/00	In	11/27/00	In	12/02/00	In	12/04/00	In	12/04/00	In	12/04/00	In	12/04/00	NS
12/10/00	12/04/00	In	11/27/00	In	12/02/00	In	12/04/00	In	12/04/00	In	12/04/00	In	12/04/00	In
12/11/00	12/04/00	In	11/27/00	In	12/02/00	In	12/04/00	In	12/04/00	In	12/04/00	In	12/04/00	NS
12/12/00	12/04/00	In	11/27/00	In	12/02/00	In	12/04/00	In	12/04/00	In	12/04/00	In	12/04/00	In
12/13/00	12/04/00	In	11/27/00	In	12/02/00	In	12/04/00	In	12/04/00	In	12/04/00	In	12/04/00	NS
12/14/00	12/04/00	In	11/27/00	In	12/02/00	In	12/04/00	In	12/04/00	In	12/04/00	In	12/04/00	In
01/05/01	01/04/01	7-pt; In	01/04/01	7-pt; In	01/04/01	7-pt; In	01/04/01	7-pt; In	01/04/01	7-pt; In	01/05/01	7-pt; In	01/04/01	7-pt; In
01/29/01	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/05/01	NS	01/04/01	In
02/01/01	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/05/01	In	01/04/01	NS
02/04/01	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/05/01	In	01/04/01	In
02/07/01	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/05/01	In	02/07/01	7-pt; NS
02/13/01	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/05/01	In	02/07/01	In
02/16/01	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/04/01	In	01/05/01	In	02/07/01	NS
02/23/01	02/21/01	7-pt; In	02/21/01	7-pt; In	02/21/01	7-pt; In	02/21/01	7-pt; In	02/21/01	7-pt; In	02/21/01	7-pt; In	02/21/01	7-pt; In
03/05/01	02/21/01	In	02/21/01	In	02/21/01	In	02/21/01	In	02/21/01	In	02/21/01	NS; In	02/21/01	NS
03/08/01	02/21/01	In	02/21/01	In	02/21/01	In	02/21/01	In	02/21/01	In	02/21/01	NS	02/21/01	In
03/12/01	02/21/01	NS; In	02/21/01	NS; In	02/21/01	NS; In	02/21/01	In	02/21/01	In	03/12/01	7-pt; In	02/21/01	NS

Shaded information denotes stations that do **not meet** Quality Assurance Specifications.

Note: PUF Singlepoint Flow Check not required for first sampling event after 7-point calibration.

na : no flow check available
 NS: Not Sampled
 NA: Not Applicable
 In: within specifications
 Out: not within specifications

Table 16
Hunters Point Shipyard, Parcel E
High Resolution PUF Quality Assurance

	Station A		Station B		Station C		Station D		Station E		Station F		Station G	
Sample Date	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.	Most Recent PUF 7-Pt Calibration	Calib. & Flowcheck In/Out of Specs.
09/16/00	09/16/00	7-pt; In	09/16/00	7-pt; In	NS	NA	NS	7-pt; In	09/16/00	7-pt; In	09/16/00	7-pt; In	NS	NA
09/24/00	09/16/00	-	09/16/00	-	09/17/00	7-pt; In	09/16/00	-	09/16/00	-	09/16/00	-	09/24/00	7-pt; In
10/02/00	09/16/00	-	09/16/00	-	09/17/00	-	09/16/00	-	09/16/00	-	09/16/00	-	NS	NA
10/10/00	09/16/00	Flow: In	09/16/00	Flow: In	09/17/00	Flow: In	09/16/00	Flow: In	09/16/00	Flow: In	09/16/00	Flow: In	09/24/00	Flow: In
10/18/00	09/16/00	Flow: In	09/16/00	Flow: In	09/17/00	Flow: In	09/16/00	Flow: In	09/16/00	Flow: In	09/16/00	Flow: In	NS	NA

Shaded information denotes stations that do **not meet** Quality Assurance Specifications.

Note: PUF Singlepoint Flow Check not required for first sampling event after 7-point calibration.

- : no flow check available
 NS: Not Sampled
 NA: Not Applicable
 In: within specifications
 Out: not within specifications

Table 17
Hunters Point Shipyard, Parcel E
TSP Quality Assurance

Calibration Date	Stations						
	A	B	C	D	E	F	G
09/09/00	09/08/00 - Installation of samplers A, B, C, D, E, and F						
	In	Out	In	In	In	In	NA
09/24/00	09/023/00 - Conditioning motor changeout on all samplers						
	In	In	In	In	In	In	NA
09/28/00	09/28/00 - Installation of sampler G						
	In	In	In	In	In	In	In
10/18/00	10/18/00 - Conditioning motor changeout on all samplers						
	In	In	In	In	In	In	In
12/05/00	12/04/00 - Conditioning motor changeout on all samplers						
	In	In	In	In	In	In	In
01/05/01	01/05/01 - Conditioning motor changeout on samplers A, B, C, D, F, and G						
	In	In	In	In	NA	In	In
01/16/01	01/16/01 - Conditioning motor changeout on sampler E						
	NA	NA	NA	NA	In	NA	NA
01/29/01	01/29/01 - Recalibrate sampler E						
	NA	NA	NA	NA	In	NA	NA
03/15/01	03/15/01 - Conditioning motor changeout on all samplers						
	In	In	In	In	In	In	In

Shaded information denotes stations that do **not meet** Quality Assurance Specifications.

In: calibration within specifications
 Out: calibration not within specifications
 NA: not applicable

Table 18
Hunters Point Shipyard, Parcel E
Field Blank Results

Sample Date	mg/m3									
	PUF		VOC		TSP		Hi Res PUF		Chlor / Phos	
9/8 to 9/9	NS		NS		NS		NS		NS	
9/9 to 9/10	NS		NS		NS		NS		NS	
9/10 to 9/11	Phenanthrene	0.00805	Benzene	0.511	ND		NS		NS	
	Di-n-butylphthalate	0.0278								
9/11 to 9/12	NS		NS		NS		NS		NS	
9/12 to 9/13	Di-n-butylphthalate	0.0214	ND		ND		NS		NS	
9/13 to 9/14	NS		NS		NS		NS		NS	
9/14 to 9/15	Di-n-butylphthalate	0.00702	ND		ND		NS		NS	
	Bis(2-ethylhexyl)phthalate	0.0060								
9/15 to 9/16	NS		NS		NS		NS		NS	
9/16 to 9/17	Diethylphthalate	0.00382	ND		ND		OCDD	0.0507	NS	
	Di-n-butylphthalate	0.0117								
9/17 to 9/18	NS		NS		NS		NS		NS	
9/18 to 9/19	Diethylphthalate	0.00608	ND		ND		NS		NS	
	Di-n-butylphthalate	0.00868								
	Butyl Benzyl Phthalate	0.00423								
	Bis(2-ethylhexyl)phthalate	0.00365								
9/19 to 9/20	NS		NS		NS		NS		NS	
9/20 to 9/21	Butyl Benzyl Phthalate	0.00369	ND		ND		NS		NS	
	Bis(2-ethylhexyl)phthalate	0.00483								
9/21 to 9/22	NS		NS		NS		NS		NS	
9/22 to 9/23	Di-n-butylphthalate	0.00322	ND		ND		NS		NS	
9/23 to 9/24	NS		NS		NS		NS		NS	
9/24 to 9/25	NS		NS		NS		NS		NS	
9/25 to 9/26	ND		ND		ND		NS		NS	
9/26 to 9/27	NS		NS		NS		NS		NS	
9/27 to 9/28	ND		ND		ND		NS		NS	
9/28 to 9/29	NS		NS		NS		NS		NS	
9/29 to 9/30	Di-n-butylphthalate	0.00840	ND		ND		NS		NS	
9/30 to 10/1	NS		NS		NS		NS		NS	
10/1 to 10/2	NS		NS		NS		NS		NS	
10/2 to 10/3	ND		ND		ND		ND		NS	
10/3 to 10/4	NS		NS		NS		NS		NS	
10/4 to 10/5	ND		ND		ND		NS		NS	
10/5 to 10/6	NS		NS		NS		NS		NS	
10/6 to 10/7	ND		ND		ND		NS		NS	
10/7 to 10/8	NS		NS		NS		NS		NS	
10/8 to 10/9	ND		ND		ND		NS		NS	
10/9 to 10/10	NS		NS		NS		NS		NS	
10/10 to 10/11	ND		ND		ND		NS		NS	
10/11 to 10/12	NS		NS		NS		NS		NS	
10/12 to 10/13	Di-n-butylphthalate	0.00661	ND		ND		NS		NS	
10/13 to 10/14	NS		NS		NS		NS		NS	
10/14 to 10/15	ND		Benzene	0.38	ND		NS		NS	
			Toluene	0.75						
10/15 to 10/16	NS		NS		NS		NS		NS	
10/16 to 10/17	ND		ND		ND		NS		NS	
10/17 to 10/18	NS		NS		NS		NS		NS	
10/18 to 10/19	NS		ND		NS		ND		NS	
10/19 to 10/20	ND		NS		ND		NS		NS	
10/20 to 10/21	NS		NS		NS		NS		NS	
10/21 to 10/22	NS		NS		NS		NS		NS	
10/22 to 10/23	NS		NS		NS		NS		NS	
10/23 to 10/24	ND		NS		NS		NS		NS	
10/24 to 10/25	NS		ND		ND		NS		NS	
10/25 to 10/26	ND		NS		NS		NS		NS	
10/26 to 10/27	NS		NS		NS		NS		NS	

ND: not detected
NS: not sampled

Table 18
Hunters Point Shipyard, Parcel E
Field Blank Results

Sample Date	mg/m3									
	PUF		VOC		TSP		Hi Res PUF		Chlor / Phos	
10/27 to 10/28	NS		NS		NS		NS		NS	
10/28 to 10/29	NS		NS		NS		NS		NS	
10/29 to 10/30	ND		NS		NS		NS		NS	
10/30 to 10/31	NS		NS		NS		NS		NS	
10/31 to 11/1	ND		NS		NS		NS		NS	
11/1 to 11/2	NS		NS		NS		NS		NS	
11/2 to 11/3	ND		NS		NS		NS		NS	
11/3 to 11/4	NS		NS		NS		NS		NS	
11/4 to 11/5	ND		ND		ND		NS		NS	
11/5 to 11/6	NS		NS		NS		NS		NS	
11/6 to 11/7	ND		NS		NS		NS		NS	
11/7 to 11/8	NS		NS		NS		NS		NS	
11/8 to 11/9	ND		NS		NS		NS		NS	
11/9 to 11/10	NS		NS		NS		NS		NS	
11/10 to 11/11	ND		ND		ND		NS		NS	
11/11 to 11/12	NS		NS		NS		NS		NS	
11/12 to 11/13	ND		NS		NS		NS		NS	
11/13 to 11/14	NS		NS		NS		NS		NS	
11/14 to 11/15	ND		NS		NS		NS		NS	
11/15 to 11/16	NS		NS		NS		NS		NS	
11/16 to 11/17	ND		ND		ND		NS		NS	
11/17 to 11/18	NS		NS		NS		NS		NS	
11/18 to 11/19	ND		NS		NS		NS		NS	
11/19 to 11/20	NS		NS		NS		NS		NS	
11/20 to 11/21	ND		NS		NS		NS		NS	
11/21 to 11/22	NS		NS		NS		NS		NS	
11/22 to 11/27	NS		NS		NS		NS		NS	
11/27 to 11/28	ND		NS		NS		NS		NS	
11/28 to 11/29	NS		NS		NS		NS		NS	
11/29 to 11/30	ND		NS		NS		NS		NS	
11/30 to 12/1	NS		ND		ND		NS		NS	
12/1 to 12/2	ND		NS		NS		NS		NS	
12/2 to 12/3	NS		NS		NS		NS		NS	
12/3 to 12/4	ND		NS		NS		NS		NS	
12/4 to 12/5	NS		NS		NS		NS		NS	
12/5 to 12/6	ND		NS		NS		NS		NS	
12/6 to 12/7	NS		NS		NS		NS		NS	
12/7 to 12/8	ND		ND		ND		NS		NS	
12/8 to 12/9	NS		NS		NS		NS		NS	
12/9 to 12/10	ND		NS		NS		NS		NS	
12/10 to 12/11	NS		NS		NS		NS		NS	
12/11 to 12/12	ND		NS		NS		NS		NS	
12/12 to 12/13	NS		NS		NS		NS		NS	
12/13 to 12/14	ND		NS		NS		NS		NS	
12/14 to 12/15	NS		NS		NS		NS		NS	
12/15 to 1/5	NS		NS		NS		NS		NS	
1/5 to 1/6	ND		ND		ND		NS		NS	
1/6 to 1/29	NS		NS		NS		NS		NS	
1/29 to 1/30	NS		NS		NS		NS		NS	
1/30 to 2/1	NS		NS		NS		NS		NS	
2/1 to 2/2	ND		ND		Copper	0.275	NS		NS	
2/2 to 2/4	NS		NS		NS		NS		NS	
2/4 to 2/5	NS		NS		NS		NS		NS	
2/5 to 2/7	NS		NS		NS		NS		NS	
2/7 to 2/8	ND		ND		ND		NS		NS	
2/8 to 2/13	NS		NS		NS		NS		NS	
2/13 to 2/14	NS		NS		NS		NS		NS	

ND: not detected
NS: not sampled

Table 18
Hunters Point Shipyard, Parcel E
Field Blank Results

Sample Date	mg/m3									
	PUF		VOC		TSP		Hi Res PUF		Chlor / Phos	
2/14 to 2/16	NS		NS		NS		NS		NS	
2/16 to 2/17	ND		ND		ND		NS		NS	
2/17 to 2/23	NS		NS		NS		NS		NS	
2/23 to 2/24	NS		NS		NS		NS		NS	
2/24 to 3/5	NS		NS		NS		NS		NS	
3/5 to 3/6	ND		ND		ND		NS		NS	
3/6 to 3/8	NS		NS		NS		NS		NS	
3/8 to 3/9	NS		NS		NS		NS		NS	
3/9 to 3/12	NS		NS		NS		NS		NS	
3/12 to 3/13	ND		ND		ND		NS		NS	

ND: not detected
NS: not sampled

Table 19
Hunters Point Shipyard, Parcel E
Field Duplicate Summary

When Stations D and G Both Had Detections		
Relative Percent Difference:		
Both Stations D and G Detected	238	
Relative % Difference 0 - 50 %	181	76%
Relative % Difference > 50 %	57	24%
0 - 10 %	70	29%
11 - 20 %	43	18%
21 - 30 %	33	14%
31 - 40 %	18	8%
41 - 50 %	17	7%
51 - 60 %	6	3%
61 - 70 %	8	3%
71 - 80 %	3	1%
81 - 90 %	3	1%
91 - 100 %	5	2%
101 - 120 %	8	3%
121 - 140 %	10	4%
141 - 160 %	6	3%
161 - 180 %	4	2%
181 - 200 %	4	2%
> 200 %	0	0%
Total	238	

Total Comparisons (# of times both Stations D and G were sampled and analyzed for Detected Compounds)	966	
# of times both Stations D and G were Detected	238	25%
# of times both Station D and G were not detected	638	66%
# of times one and only of either D or G was detected	90	9%

APPENDIX A CHAIN-OF-CUSTODY FORMS

Complete Appendix A is provided on CD-ROM #2 of this submittal

APPENDIX B VOLUME CALCULATION SHEETS

Complete Appendix B is provided on CD-ROM #2 of this submittal

APPENDIX C FIELD ACTIVITY DAILY LOGS

Complete Appendix C is provided on CD-ROM #2 of this submittal

APPENDIX D METEOROLOGICAL DATA

Complete Appendix D is provided on CD-ROM #2 of this submittal

APPENDIX E WIND ROSE PLOTS

Complete Appendix E is provided on CD-ROM #2 of this submittal

APPENDIX F WIND CORRELATION DATA

Complete Appendix F is provided on CD-ROM #2 of this submittal

APPENDIX G LABORATORY AND RADIOACTIVE REPORTS/RESULTS

Complete Appendix G is provided on CD-ROM #2 of this submittal

APPENDIX G-1
LABORATORY ANALYTICAL REPORTS - VOC/TSP/PUF

APPENDIX G-2
LABORATORY ANALYTICAL REPORTS - HIGH RESOLUTION DIOXIN/FURAN

APPENDIX G-3
LABORATORY ANALYTICAL REPORTS - CHLORINE/PHOSGENE

APPENDIX G-4 RADIOACTIVITY REPORT/RESULTS

APPENDIX H RESULTS SUMMARY BY COMPOUND

Complete Appendix H is provided on CD-ROM #2 of this submittal

APPENDIX I DAILY DETECTION SUMMARIES

Complete Appendix I is provided on CD-ROM #2 of this submittal

APPENDIX I-1
DAILY DETECTION SUMMARIES - VOC/TSP/PUF

APPENDIX I-2

DAILY DETECTION SUMMARIES - HIGH RESOLUTION DIOXINS/FURANS

APPENDIX J 7-POINT CALIBRATION

Complete Appendix J is provided on CD-ROM #2 of this submittal

APPENDIX J-1
LOW RESOLUTION PUF 7-POINT CALIBRATIONS
AND SET POINT DETERMINATIONS

APPENDIX J-2
HIGH RESOLUTION PUF 7-POINT CALIBRATIONS
AND SET POINT DETERMINATIONS

APPENDIX K PUF DAILY FLOW CHECKS

Complete Appendix K is provided on CD-ROM #2 of this submittal

APPENDIX K-1

LOW RESOLUTION PUF DAILY FLOW CHECKS

APPENDIX K-2

HIGH RESOLUTION PUF DAILY FLOW CHECKS

APPENDIX L PUF WHEEL CHARTS & MAGNEHELIC[®] HOURLY READINGS

[Complete Appendix L is provided on CD-ROM #2 of this submittal](#)

APPENDIX M AIR SAMPLING LOGS

Complete Appendix M is provided on CD-ROM #2 of this submittal

APPENDIX M-1
AIR SAMPLING LOGS - VOC/TSP/PUF

APPENDIX M-2
AIR SAMPLING LOGS - HIGH RESOLUTION PUF

APPENDIX M-3
AIR SAMPLING LOGS - CHLORINE/PHOSGENE

APPENDIX N TSP CALIBRATION SHEETS

Complete Appendix N is provided on CD-ROM #2 of this submittal

APPENDIX O TSP WHEEL CHARTS

Complete Appendix O is provided on CD-ROM #2 of this submittal

APPENDIX P METEOROLOGICAL INFORMATION AND CERTIFICATION

[Complete Appendix P is provided on CD-ROM #2 of this submittal](#)